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AN
E S S A Y

CONCERNING THE

N A T U R E

O F

A L I M E N T S,

And the CHOICE of THEM,

According to the different Constitutions of
HUMAN BODIES.

In which the different Effects, Advantages, and
Disadvantages of Animal and Vegetable
Diet, are explain'd.

The THIRD EDITION.

To which are added,

PRACTICAL RULES of DIET

In the various Constitutions and Diseases of
HUMAN BODIES.

By JOHN ARBUTHNOT, M. D.
Fellow of the *Colleges of Physicians of London and Edinburgh,*
and of the *Royal Society.*

L O N D O N:

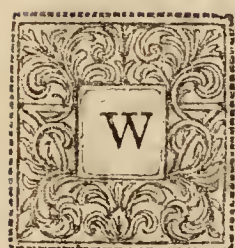
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M D C C X X X V.





THE
P R E F A C E.



*W*HAT gave Occasion to the following *ESSAY* is briefly what follows; my learned and worthy Friend Dr. Cheyne, some Years ago published an *Essay upon Health and long Life*, in which he gave a Proof both of his Judgment and Humanity. This Book was receiv'd by the Publick with the Respect that was due to the Importance of its Contents; it became the Subject of Conversation, and produc'd even Sects in the dietetick Philosophy. In some of those symposiac Disputations amongst my Acquaintance, being appeal'd to; I happen'd to affirm that the dietetick Part

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of Medicine depended, as much as any of the rest, upon scientifick Principles: Being call'd upon to make good my Assertion, I compos'd the following short Treatise, which is, properly speaking, only an Essay or Attempt of a Physiology of Aliment. The most of it was wrote in a Situation where I had no Assistance, except from Extracts out of some imperfect Editions of the Works of the most learned and industrious Boerhaave, and from a very excellent Edition of his Chymistry by Dr. Shaw and Mr. Chambers. This I am oblig'd to say once for all, to save my self the Trouble of perpetual Quotations: The Circumstances of ill Health, and Absence from my Books, in which I compos'd it, and the Want of Leisure since to correct it sufficiently, may be some Excuse for the Want of that Accuracy which the Subject deserves. I am likewise obliged to make use of a very common and trivial Reason for publishing it at this Time, viz. the Approbation of some Friends

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Friends who perus'd it, and persuaded me that it might be of some Use to the Publick. I can say but little of the Merit of the Performance, but a great deal of that of the Subject; for surely the Choice and Measure of the Materials of which the whole Body is compos'd, and what we take daily by Pounds, is at least of as much Importance, as of what we take seldom, and only by Grains and Spoonfuls.

The Reader must not be surpriz'd to find the most common and ordinary Facts taken notice of: In Subjects of this Nature there is no room for Invention; many important Consequences may be drawn from the Observation of the most common Things, and analogous Reasonings from the Causes of them.

I believe a Reader, with as much Anatomy as a Butcher knows, and moderate Skill in Mechanicks, may understand the whole Essay, provided he goes through it at Leisure, and with Attention: To a Person so qualify'd

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many Observations concerning his own Constitution will occur, which I was not capable of making; as for the hard Words which I was oblig'd to use, they are either Terms of Art, or such as I substituted in the place of others, that were too low and vulgar; the Reader will find most of them explain'd at the Beginning of the Book: And I hope an Indulgence to a few Readers will not be reckon'd an Indignity to the rest; and that I shall not be suspected of Affectation, where my principal Intention was Perspicuity. In Subjects of this kind, one is oblig'd in the same Paragraph, to join many Particulars together in one Proposition, because the Repetition of the Substantive Verb would be tedious and unnecessary. This hinders the Stile from being smooth, but not from being perspicuous.

I have laid a Plan for treating the other Parts of Diet, as Air, Rest, and Motion after the same Manner; but I am oblig'd to delay the Execution
of

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of my Design till I have more Leisure.

I do not presume to instruct the Gentlemen of my own Profession; and if any of them shall instruct me better, I declare beforehand that I am very willing to be convinc'd: I will not defend any Mistake, and at the same time I do not think my self oblig'd to answer every frivolous Objection.





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THE
EXPLANATION
OF SOME
CHYMICAL TERMS

Used in the following

ESSAY.



AS the following Treatise is chiefly design'd for Persons not bred up in the Profession of Physick, it is necessary to give a general Notion of the Meaning of some Chymical Words that frequently occur in it.

The Principles of Natural Bodies, according to the Chymists, are Water, Earth, Oil, Salt, Spirit, of all which every one has some general Notion; but the Diversity of the Names and Qualities of Salts and Spirits occasions some Confusion in the Minds of such as are ignorant of Chymistry.

The Chymists define Salt from some of its Properties, to be a Body fusible in the
a Fire,

The EXPLANATION

Fire, congealable again by Cold into brittle Glebes, or Crystals, soluble in Water so as to disappear, not malleable, and having something in it which affecteth the Organs of Taste with a Sensation of Acrimony or Sharpness. Of Native Salts there are,

First, Sea-Salt and Sal Gemmæ, or Rock-Salt, which are of the same Nature. The First in all Appearance being a Solution of the Second in the Water of the Ocean; these two are perfect Salts, fixt and immutable by any Power in Animal Bodies; for the other Salts are never found in the Urine of any Animal that swallows them down, but Sea-Salt is always found in the Urine of every Animal that takes it, and in no other.

Secondly, Sal Nitre, or Sal Petre, which is more easily dissolv'd by Fire, and less easily by Water than any other Salt, it is cold, and affects the Tongue like a saltish Ice: It seems to be of a middle Nature, between Fossil and Animal, being producible from Animal Excrements intermix'd with vegetable Salts.

Thirdly, Sal Ammoniac of two Sorts, the ancient described by *Pliny* and *Dioscorides*, no more to be found; and the modern, which is a Compound of Fossile, Animal, and Vegetable Salt. This Salt cools Water; it is fix'd in a gentle Fire, and sublimes in a great one; its Taste is quicker than that of common Salt, resembling that of Urine.

Fourthly,

Fourthly, Borax, a Fossile Salt of a sweetish Taste, it promotes the Fusion of Metals.

Fifthly, Alum, which, tho' no pure Salt, has most of the Properties of Salts, being soluble in Water, &c.

Salts are divided into Acid and Alkaline: Of Acid or Sour, one has a Notion from Taste; Sourness being one of those simple Ideas, which one cannot more plainly describe. What being mix'd with an Acid causeth an Effervescence, is call'd an Alkali.

Effervescence, in the Chymical Sense, signifies an intestine Commotion, produced by mixing two Bodies together, that lay at rest before; attended sometimes with a hissing Noise, Frothing, and Ebullition: For Example, let us place in the first Class, Acids, as Vinegar, Juice of Limons, Juice of Oranges, Spirit of Nitre, Spirit of Alum: In the second Class, other saline Substances obtain'd from Animals and Vegetables, by Distillation, Putrefaction, Calcination, as Spirit of Urine, Spirit of Hartshorn, Salt of Tartar; because the Substances of the second Class being mix'd with the Substances of the first, raise an Effervescence, they are call'd Alkalis. There is a third Class of Substances, commonly call'd Absorbents, as the various kinds of Shells, Coral, Chalk, Crabs-eyes, &c. Which being mix'd with the first Class, likewise

The EXPLANATION

raise an Effervescence, and are therefore call'd Alkalis, tho' not so properly; for they are not Salts, and have nothing common with the second Class, except this Quality of fermenting with Acids.

It is observable, that a violent Cold, as well as Heat, may be produced by this Ebullition; for if Sal Ammoniac, or any pure volatile Alkali dissolv'd in Water be mix'd with an Acid, an Ebullition with a great Degree of Cold will ensue, therefore, I think (with leave of the Chymists) Effervescence not so proper a Word to express this intestine Motion. There is another Criterion of Acid and Alkali by the Change of Colour which they produce in some Bodies; for Example, those Liquors, which being pour'd to the Syrup of Violets, turn it red, are Acids; those which change it into a green Colour, are reckon'd Alkalis. Thus Oil of Vitriol turns Syrup of Violets red, and Oil of Tartar green.

The Word Alkali, comes from an Herb call'd by the *Egyptians*, Kali. This Herb they burnt to Ashes, boil'd them in Water; and after having evaporated the Water, there remain'd at the bottom a white Salt, this they call'd Sal Kali, or Alkali. It is corrosive, producing Putrefaction in Animal Substances, to which it is apply'd.

Substances which are not perfectly Acid, but naturally turn so, I call Acescent.

Sub-

Of some Chymical T E R M S.

Substances which are not perfectly Alkaline, but naturally turn so, I call Alkalescent.

These are not Qualities in Bodies merely imaginary, but have very different and contrary Effects upon Human Bodies.

Salts, which are neither acid nor alkaline, are call'd Neutral; so are Sal Ammoniac, Sea-Salt, Sal Gemmæ, Borax, Alum, Nitre, which as long as they retain their saline Quality, are neither acid nor alkaline. But the Chymical Products of them all (except Sal Ammoniac) are generally Acid.

Fix'd Salts are such as sustain the Fire without flying away.

Volatile Salts fly away with a small Heat, affecting the Nose with an urinous Smell.

There are volatile and fix'd Alkalis.

The essential Salts of Plants are such as shoot upon the Sides of the Vessels, which contain their express'd Juices.

In Distillations, what trickles down the Sides of the Receiver in certain unctuous Rivulets, if it will not mix with Water, it is call'd Oil, if it will mix with Water, it is call'd Spirit: Spirits are either inflammable, or not inflammable; the last either Acid or Alkaline. Alkaline Spirits, are subtile volatile Liquors, that run in Veins down the Sides of the Receiver

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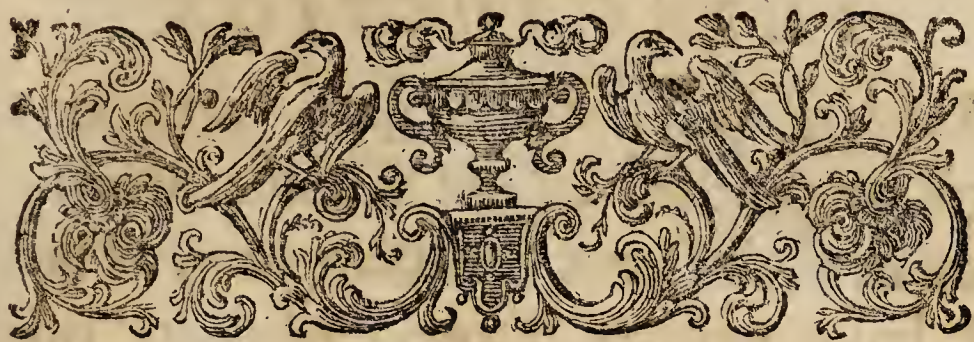
The EXPLANATION

in Distillations, which will not take Fire, mix with Water, and contain some Alkaline Salt, as Spirit of Hartshorn. Such are obtain'd from all the Parts of Animals, from all Plants by Putrefaction, and from the pungent kind, as Mustard, Horfe-Radish, &c. without it. Acid Spirits are subtile Liquors which come over in Distillations, not inflammable, miscible with Water, such are obtain'd from Vegetables distill'd with Water, and likewise from Fossils; inflammable Spirits are subtile volatile Liquors which come over in Distillations, miscible with Water, and wholly combustible; such Spirits are obtainable from Plants by a previous Fermentation, and not without it. By the Spirit of a Plant or that of an Animal, we understand that pure elaborated Oil, which by reason of its extreme Volatility exhales spontaneously, in which the Odour or Smell consists.

Sope is a Mixture of a fix'd Alkaline Salt and Oil, in common Use its Virtues are cleansing, penetrating, attenuating and resolving. Any Mixture of any oily Substance with Salt may be call'd a Sope.

Bodies of this Nature are call'd Saponaceous.

INTRO-



INTRODUCTION.



HE who would skilfully treat of the Nature and Choice of different sorts of Aliment, ought to draw his Observations from the following Particulars. *First*, From the Alterations which the Aliment undergoes in its Passage into the Blood. *Secondly*, From the Alteration it undergoes during its Circulation with the Blood. *Thirdly*, From the Nature and most simple Analysis of Vegetable Substances. *Fourthly*, From the Nature and most simple Analysis of Animal Substances. *Fifthly*, He ought to treat of the Effects of different sorts of Alimentary Substances upon the Fluids and Solids of a Human Body. *Sixthly*,

INTRODUCTION.

Sixthly, Of the different Intentions to be pursued in the Choice of Aliment in different Constitutions. Tho' I have neither Time, Ability, nor Observations sufficient to handle those Particulars so fully as they deserve, I hope at least to give a Specimen how they ought to be treated.

This is agreeable to the Doctrine of *Hippocrates*, who tells you in his first Book of Diet, that to write duly upon it, one must understand the Nature of Aliment, and of the Person it is given to.

For the Ease of the Reader I have set down every thing in distinct Propositions, with Inferences and Observations; the first in *Roman*, the other in common Numbers.





A N

E S S A Y

CONCERNING

The Nature of Aliments, and the Choice
of them, according to the different
Constitutions of Human Bodies.

C H A P. I.

*Observations drawn from the Altera-
tions which the Aliment undergoes
in its passage into the Blood.*

P R O P. I.



MASTICATION * is a
very necessary Preparation
of solid Aliment, without
which there can be no good

Digestion.

* *Chewing.*

B

By

An ESSAY concerning

By Chewing, solid Aliment is divided into small Parts; in a human Body, there is no other Instrument to perform this Action, but the Teeth. By the Action of Chewing, the Spittle and Mucus are squeez'd from the Glands, and mix'd with the Aliment, which Action if it be long continued, will turn the Aliment into a sort of Chyle. The Spittle is an active Liquor, immediately deriv'd from the arterial Blood. It is * saponaceous, as appears by its frothing, and likewise by Distillation, and consequently is attenuating, resolving, penetrating, and cleansing. After long Abstinence, it is extremely sharp, and copious; it ferments with the juices of Vegetables, and consequently disposeth them to be chang'd into inflammable Spirits; it discovereth its Virtues in several Chirurgical Uses. Besides, in the Action of Chewing, the Mucus mixeth with the

* *Soapy. Vide* Explanation of the Chymical Terms.

Aliment: The Mucus is an Humour different from the Spittle; and the great Quantity of Air which it contains, helps to dissolve the Aliment. The necessity of Spittle to dissolve the Aliment, appears from the contrivance of Nature in making * the salivary Ducts of Animals, which ruminant or chew the Cud, extremely open. Such Animals as swallow their Aliment without Chewing, want salivary Glands; and Birds have them placed in their Maw. There are Instances of Men who swallow'd their Meat whole, but ruminated or chew'd the Cud afterwards. Rumination seems to be given to Animals to enable them at once to lay up a great store of Food and afterwards to chew it. And Animals ruminant more upon Hay than Grass, the Food being harder. From all which Observations it appears, that the Solution of the Aliment by Mastication is very necessa-

* *The Canals which separate the Spittle.*

ry; and that without it the Aliment could not be duly disposed for the other Changes which it receives as it passeth through the* Alimentary Duct.

1. A great loss of Spittle causeth a decay of Appetite. This has been confirm'd by Experience in several, who have made it their constant Custom to chew Mastick; chewing and smoking of Tobacco is only proper for phlegmatick People.

2. The Humour of Salivation is not properly Spittle, but putrified Blood.

3. The Depravation of the Instruments of Mastication, by a paralytical Disposition, or by the want of Teeth, as in old Men and Infants, is a natural Indication of a liquid Diet, as of Milk and Broths, and even such of them as take Solids ought to chew in order to make an Expression of the Spittle.

* *The whole Passage from the Mouth to the Anus.*

P R O P. II.

The Change which is made of the Aliment in the Stomach is effected by * Attrition of the solid Parts, or inward Coat of the Stomach, and the Action of a dissolvent Liquor assisted with Heat.

The Liquor in the Stomach is a Compound of that which is separated from its inward Coat; of the Spittle, which is almost continually swallow'd, and the Liquor which distills from the Gullet. By the help of this Liquor, and the constant Attrition of the solid Parts, the Aliment is dissolv'd by an Operation resembling that of making an Emulsion; in which Operation the Oily parts of Nuts and Seeds being gently ground in a marble Mortar, and gradually mix'd with some watery Liquor, are dissolv'd into a sweet, thick, turbid,

* *Rubbing, Grinding.*

milky Liquor, resembling the Chyle in an Animal Body. That the Stomach in Animals grinds the Substances which it receives, is evident from the Dissection of Animals, which have swallow'd Metals, which have been found polish'd on the side next the Stomach. Birds being without Teeth to chew their Aliment, have strong and nervous Stomachs, to make this Attrition the stronger; and this motion in them hath been both seen and heard. The Rugæ or Plies of the inward Coat of the Stomach, contribute to the detaining the Aliment in the Stomach. The Heat in Land Animals assists likewise in the Solution of the Aliment, but not much; for Fishes have a strong Digestion without it, tho' by the trial of the Thermoscope, they have more heat than the Element which they swim in. It has been shew'd before that the Spittle is a great Dissolvent, and there is a great quantity of it in
the

the Stomach, being swallow'd constantly, at least in Sleep. He who eats a Pound of Bread swallows at least as much Spittle as Bread. This Liquor of the Stomach in a sound State is not Acid, for it has been found by Experiments, that Pearls have pass'd through Cocks and Hens undissolv'd.

1. The Liquor of the Stomach, which with fasting grows extremely sharp, and the quick Sensation of the inward villous Coat of the Stomach, seem to be the cause of the Sense of Hunger.

2. Such as have, by the use of spirituous Liquors, weaken'd and destroy'd some of the solid parts of the Stomach, can neither recover a good Appetite nor right Digestion; for this inward villous Coat when destroy'd cannot be restor'd.

3. This Liquor of the Stomach may (by reason of some saline Acrimony) acquire some determined Quality, and affect human Creatures with

Appetites of other Animals of unusual things, which in that case they can take without hurt; or it may likewise occasion an exorbitant Appetite of unusual things, which they will take in such quantities till they vomit them up like Dogs, from whence it is call'd Canine; in the first case the Organs of Taste are vitiated; both Diseases are cur'd by Diet, opposite to this Acrimony, whether Alkaline, Acid or * Muriatick.

4. Thirst and Hunger denote the State of the Spittle, and Liquor of the Stomach. Thirst is the sign of an Acrimony commonly † Alkalescent or Muriatick.

5. A paralytical Disposition of the Nerves of the Stomach, a deprav'd Condition of the Liquor of the Stomach, but chiefly something viscid, fat, and oily remaining there, destroys the Sensation of Hunger.

* *Briny.*

† *See Explanation of the Chymical Terms.*

6. The Action of the Stomach is totally stopp'd by too great Repletion, in which case both the Orifices of the Stomach by a necessary Mechanism close, and neither will admit nor expel any thing. Consequently Relaxing, as by warm Water, is the only proper Expedient.

The Signs of the Functions of the Stomach being depriv'd, are Pains in the Stomach many Hours after Repast, * Eructions either with the Taste of the Aliment, Acid, Nidoroſe, or Fœtid, reſembling the Taste of rotten Eggs; Inflations, or the Senſation of Fulneſs; Sickneſs, Hiccup, Vomiting, a Fluſhing in the Countenance, Foulneſs of the Tongue. In general, whatever be the State of the Tongue, the ſame is that of the inward Coat of the Stomach. When the Taste of the Mouth is bitter, it is a Sign of a Redundance of a bilious Alkali, and demands a quite

* *Belchings.*

An ESSAY concerning
different Diet from the case of Acidity or Sourness.

P R O P. III.

By Digestion in the Alimentary Duct the specifick Difference of all Substances is abolish'd, and the whole Action resembles Putrefaction.

Digestion is a Fermentation begun, because there are all the Requisites of such a Fermentation, Heat, Air and Motion; but it is not a compleat Fermentation, because that requires a greater time than the Continuance of the Aliment in the Stomach. Vegetable Putrefaction resembles very much Animal Digestion. Vegetable Putrefaction is produced by throwing green juicy Vegetables in a Heap in open warm Air, and pressing them together, by which all Vegetables acquire, *First*, A Heat equal to that of a Human Body.
Secondly,

Secondly, A putrid stercoraceous Taste and Odour, in Taste resembling putrid Flesh, and in Smell human Fœces. This putrid Matter being distill'd, affords, *First*, A Water impregnated with an urinous Spirit, like that obtainable from Animal Substances, which Water is separable into Elementary Water, and a volatile Animal Salt. *Secondly*, A volatile oily Alkaline Salt. *Thirdly*, A volatile thick Oil. *Fourthly*, The remainder being calcin'd affords no fixt Salt; in short, every thing happens as if the Subject had not been Vegetable, but Animal. Putrefaction utterly destroys the specifick Difference of one Vegetable from another, converting them into a pulpy Substance of an Animal Nature: Making the same Alteration very near, as if the Vegetable had gone through the Body of a sound Animal; for tho' such an Animal should entirely live upon Acids, no part of
its

its Body affords any acid fix'd Salt.
 * This is so far true, that even the Herbs taken out of the *Omasus* of ruminating Animals afford the same Contents as putrified Vegetables. But tho' this Action of Putrefaction comes the nearest to Animal Digestion, it so far differs from it, that the Salts and Oils are only detain'd in the Animal Body so long as they remain benign and friendly to it; but as soon as they putrify entirely, are either thrown off, or must produce mortal Distempers.

P R O P. IV.

The Gall is the principal Dissolvent of the Aliment, and when it is peccant or deficient, there can be no right Digestion.

The Bile is of two sorts, the Cystick or that contain'd in the Gall-Bladder, which is a sort of Repository

* *Vide* Philosophical Transactions.

for the Gall, and the Hepatick or what flows immediately from the Liver. The Cystick Gall is thick and intensely bitter, so that one Drop of it will make a whole Pint of Water bitter. The Hepatick Gall is more fluid and not so bitter. There is no other bitter Humour in a Human Body, besides Gall, except the Wax of the Ear. The Gall is not a perfect Alkali, for it does not ferment with an Acid, but it is Alkalescent, entirely opposite to Acescents, and soon corruptible, and convertible into a Corrosive Alkali. It is a saponaceous Substance, being compos'd of an Alkaline Salt, Oil, and Water, all which can be extracted from it. The Bile, like Soap, takes out Spots from Wool or Silk, and the Painters use it to mix their Colours; by this saponaceous Quality, it mixeth the oily and watery Parts of the Aliment together. But tho' the Bile be an Oil, it is not combustible till dry. These

Qualities

Qualities make it a most powerful and proper Dissolvent, which appears by Experience. The Milk in the Stomach of Calves, which is coagulated by the Runnet, is again dissolved, and rendered fluid by the Gall in the *Duodenum*. Voracious Animals, and such as do not chew, have a great quantity of Gall, and some of them have the Biliary Duct inserted into the *Pylorus*. It is likewise the chief Instrument (by its Irritation) of the peristaltick Motion of the Guts. Such as have the Bile peccant or deficient are relieved by Bitters, which are a sort of subsidiary Gall. The learned *Boerhaave* has found the Gall of an Eel, which is most intensely bitter, a most effectual Remedy in such Cases. The common Symptoms of the Excretion of the Bile being vitiated, are a yellowish Colour of the Skin, white hard Fæces, a Loss of Appetite, a lixivial Urine.

P R O P. V.

The Bile is so acrid, that of itself it could not be admitted into the Lacteal Vessels. Therefore Nature has furnish'd another Humour, *viz.* the pancreatick Juice to temper its Bitterness and Acrimony, after it has done its Office.

The *Pancreas* is a large salivary Gland separating about a Pound of an Humour like Spittle, in twelve Hours. It is probable that this Humour tempers the Acrimony of the Gall, because the Bile mix'd with Spittle loseth its Bitterness in time, and even Wormwood eat with Bread will do so, because it is mix'd with a great Quantity of Spittle. The pancreatick Juice likewise mixeth the Parts of the Aliment rendring the Chyle homogeneous. When the Bile is not separated in the Liver the Fœces are white, but this is not occasion'd

An ESSAY concerning
 sion'd by the Mixture of the pan-
 creatick Juice.

P R O P. VI.

* Acrimony and Tenacity are the two Qualities in what we take inwardly most to be avoided.

The papillous inward Coat of the Intestines is extremely sensible, and when the Acrimony is so great as to affect the solid Parts, the Sensation of Pain is intolerable. The † peristaltick Motion of the Guts, and the continual Expression of the Fluids, will not suffer the least Matter to be apply'd to one Point the least instant of Time; for the smallest quantity of Turpentine or Pitch will stick to the Fingers, but not to the Guts. But this Motion in some Human Creatures may be weak in respect to

* Sharpness and Glueness.

† Alternate Motion of Contraction and Dilatation, commonly tending downwards.

the Viscidity of what is taken so as not to be able to * propell it, the consequence of which is dangerous, and perhaps fatal to the Life of the Creature. Substances hard, cannot be dissolv'd, but they will pass; but such, whose Tenacity exceeds the Powers of Digestion, will neither pass nor be converted into Aliment. Besides, the Mouths of the † Lacteals may permit Aliment too acrimonious, or not sufficiently attenuated, to enter in People of lax Constitutions, whereas their Sphincters will shut against them in such as have strong Fibres. The Mouths of the Lacteals may be shut up by a viscid † *Mucus*, in which case the Chyle passeth by Stool, and the Person falleth into an || Atrophy.

* *Drive forwards.*

† *Vessels which carry the Chyle through the Mesentery.*

† *Snot.*

|| *Decay of Flesh.*

1. Fat or Oil is necessary, as for Animal Motion, so likewise for this peristaltick Motion of the Intestines; and lean People often suffer for want of it, as fat People may by Obstruction of the Vessels. The Fat will melt by strong Motion, as has been found in Horses by hard running.

2. This peristaltick Motion, or repeated Changes of Contraction and Dilatation, is not in the lower Guts, else one would have a continual needing to go to stool. Wind and Distention of the Bowels are Signs of a bad Digestion in the Intestines, (for in dead Animals, when there is no Digestion at all, the Distention is in the greatest Extremity) so likewise are Diarrhœas, which proceed from Acrimony, Laxity of the Bowels, or Obstruction of the Lacteals.

P R O P. VII.

The Mechanism of Nature in converting our Aliment into Animal Substances consists chiefly in two Things. *First*, In mixing constantly with it Animal Juices already prepar'd. *Secondly*, In the Action of the solid Parts as it were churning them together. This is evident, if we consider first the vast quantity of *Saliva* mix'd with the Aliment in chewing: He that eats a Pound of Bread mixeth it very near with as much Spittle, and this separated from Glands that weigh only about four Ounces. Afterwards the same Aliment is mix'd with the Liquor of the Stomach, the Bile and pancreatick Juice, and if we compute the quantity of Bile and Pancreatick, from the Weight of these *Viscera* in respect of the salivary Glands, we shall find still a vastly greater quantity of

C 2 these

these Animal Juices mix'd with the Aliment; this is not all, for when the Chyle passeth through the * Mesentery, it is mix'd with the Lymph (which is the most spirituous and elaborated Part of the Blood) from its Glands: So that the Juices of an Animal Body are as it were † cohobated, being excreted and admitted again into the Blood with the fresh Aliment; all the while the solid Parts act upon the Mixture of Aliment and Animal Juices, so as to make the Mixture more intimate and compleat. Besides, [none of these Animal Juices, except the Liquor of the Intestines, are mix'd with the Fœces of an Animal, which in a sound State are hard: So that one may compute, that a Pound of Bread before it enters the Blood, is mix'd perhaps with four

* *A Membranous part in the Lower Belly, to which the Guts are connected.*

† *New distill'd.*

times the quantity of Animal Juices. The same Oeconomy is observ'd in the Circulation of the Chyle with the Blood, by mixing it intimately with the Parts of the Fluid to which it is to be assimilated.

1. From whence it follows, that an Animal, whose Juices are unsound or solid Parts weak, can never be duly nourish'd; for unsound Juices can never duly repair the Fluids and Solids of an Animal Body, and without a due Action of the solid Parts, they never can be well mix'd. The Stomach, the Intestines, the Muscles of the lower Belly, all act upon the Aliment; besides, the Chyle is not suck'd but squeez'd into the Mouths of the Lacteals by the Action of the Fibres of the Guts: The Mouths of the Lacteals are open'd by the intestinal Tube, affecting a straight instead of a spiral Cylinder; therefore it is plain that the Chyle must be peccant in Quantity or Quality when these

Actions and Organs are too weak; and whatever strengthens the solid Parts must help the Digestion.

2. Diarrhœas and strong Purgations must spoil the first Digestion, because of the great Quantities of Animal Liquids which they expell out of the Body; a vast quantity and variety of Animal Liquors are carried off by Purging: Air, Spittle, *Mucus*, all the Liquors that are separated in the Glands of the Alimentary Duct, both sorts of Bile, the pancreatick Juice, Lymph, and sometimes Blood, computing the quantity of these Secretions, makes it plain that the whole Juices may be carried off by Purging; and when those Liquors are expell'd out of the Body, which by their mixture convert the Aliment into an Animal Liquid, this cannot so well be perform'd.

3. The peristaltick Motion of the Intestines is the last that ceaseth in an Animal Body, for it remains after

ter

ter the Motion of the Heart is ceas'd. By the Entry of the Chyle and Air into the Blood, by the Lacteals, the Animal may again revive.

The Obstruction of the Glands of the Mesentery is a great Impediment to Nutrition, for the Lymph in those Glands is a necessary Constituent of the Aliment before it mixeth with the Blood; and for the same Reason young Animals are most and best nourish'd, for the Mesenterick Glands are largest in the vigour of Youth; in old Age they vanish, and are liable to Obstructions: Therefore scrophulous Persons can never be duly nourish'd; for such as have Tumors in the Parotides often have them in the Pancreas and Mesentery.

4. In tabid Persons Milk is the best Restorative, for it is Chyle already prepar'd; the Aliment passeth very quick into the Paps of any Animal that gives Milk; for if a Nurse after being suck'd dry eats Broth, the

Infant will suck the Broth almost unalter'd.

5. The Chyle by reason of the Smoothness of its Particles is white, it grows more gray in the Thoracick Duct, where it still retains the Flavour of the Aliment.

6. Animals, which take a large quantity of Aliment by the Mouth, may be less nourish'd than those that take a smaller; for according to the Force of the * Chylopoetick Organs, a larger or less quantity of Chyle may be extracted from the same quantity of Food.

Astriction of the Belly is commonly a sign of strong Chylopoetick Organs.

P R O P. VIII.

The most subtile part of the Chyle passeth immediately into the Blood by the † absorbent Vessels of the Guts,

* *Which makes Chyle.* † *Which suck in.*

which

which discharge themselves into the Mesaraick Veins; their Largeness and Number demonstrate this, for they are numerous and vastly larger than their correspondent Arteries; besides, wherever there are * Emissaries, there are absorbent Vessels; *ex. gr.* in the Skin, by the absorbent Vessels of which Mercury will pass into the Blood.

Birds, which have strong and large Breasts, small Bellies, and their Ribs upon their Backs, have no Lacteals nor † Thoracick Duct, and their Aliment passeth immediately into the Mesaraick Veins. If one considers the Capacity of the Thoracick Duct, and the Slowness of the Passage of the Aliment by the Lacteals through it, and at the same time the great quantity of some Liquors, as of Chalybeat Water, which in some pass in a small time by Urine; by an easy

* *Vessels which throw out a Liquid.*

† *A Canal through which the Chyle passeth from the Lacteals into the Blood.*

Calculation he will be able to demonstrate that such a quantity could not pass into the Blood by the Thoracick Duct in so short a time.

Therefore when the Intention is to give an immediate Refreshment to the Spirits, as after great Abstinence and Fatigue, thin or liquid Aliment is the properest, and for the same reason Chalybeat Waters seem to be a proper Remedy in Hypochondriacal Cases; their subtle and divided Particles are taken immediately into the Mesaraick Vessels, and carried straight into the Liver and Spleen.

C H A P. II.

Observations drawn from the Circulation of the Chyle with the Blood.

P R O P. I.

THE Chyle of it self cannot pass through the smallest Vessels
(for

(for it neither will pass by Urine nor Sweat) therefore it cannot nourish the Animal, till it is converted into Blood; and it is converted into Blood by the Mechanism of Nature above describ'd, *viz.* by intimately mixing it with the Particles of the Liquor, to which it is to be assimilated, as will appear by what follows.

P R O P. II.

The Lungs are the first and chief Instrument of * Sanguification.

The Chyle first mixeth with the Blood, in the Subclavian Vein, and enters with it into the Heart, where it is very imperfectly mix'd, there being no Mechanism nor Fermentation by extraordinary Heat, &c. to convert it immediately into Blood, which is first effected by the Lungs. The Wind-pipe divides it self into a great num-

* *Making of Blood.*

ber of Branches called Bronchia, these end in small Air-Bladders dilatable and contractible, capable to be inflated by the Admission of Air, and to subside at the Expulsion of it. The Pulmonary Artery and Vein pass along the Surfaces of these Air-Bladders in an infinite number of Ramifications. A great number of those Air-Bladders form what we call Lobuli, which hang upon the Bronchia, like Bunches of Grapes upon a Stalk. These Lobuli constitute the Lobes, and the Lobes the Lungs, Let us see what effect an Engine so contriv'd will have upon the crude mixture of Blood and Chyle: first, as the Blood and Chyle pass together through the * Ramifications of the Pulmonary Artery, they will be still more perfectly mix'd; a red Liquor and a white Liquor, passing only through one Tube, will both retain their original Colours; but if this

* *Branchings.*

Pipe is divided into Branches, and these again subdivided, the red and white Liquors, as they pass through the Ramifications, will be more intimately mix'd, and both Colours will be blended together; the more Ramifications, the Mixture will be the more perfect; but this is not all, for as this Mixture of Blood and Chyle passeth through the Arterial Tube, it is press'd by two contrary Forces, that of the Heart driving it forward against the sides of the Tube, and the Elastick Force of the Air pressing it on the opposite side of those Air-Bladders; along the Surface of which (as was said before) this Arterial Tube creeps. By those two opposite Forces, the parts of the Liquor are compress'd together, and as it were churn'd, and more intimately mix'd. Moreover by the alternate Motion of those Air-Bladders, whose Surfaces are by turns freed from mutual Contact, and by a sudden Subsidence meet again by the ingress

ingress and egress of the Air; the Liquor is still farther attenuated, dissolv'd, and chang'd into a * homogeneous Fluid.

1. The Force of the Air upon the Pulmonary Artery is but small, in respect of that of the Heart, but it is still something; and whatever the effect of it be, it increaseth, and diminisheth with the Gravity of the Air, to which the † Elasticity is proportional.

As to the admittance of the weighty and elastick Parts of the Air into the Blood, through the Coats of the Vessels, it seems contrary to Experiments upon dead Bodies. The spumous and florid state, which the Blood acquires in passing through the Lungs, is easily accounted for, from its own Elasticity, and the violent Motion before describ'd; the Aerial Particles in the Blood and Chyle expanding themselves. That the Air in the Blood-

* *Of one kind.* † *Spring.*

Vessels of live Bodies has a Communication with the outward Air, I think seems plain from the Experiments of human Creatures being able to bear Air of much greater Density in diving, and of much less upon the tops of Mountains, provided the Changes be made gradually; otherwise the Air within the Vessels being of a less Density, the outward Air would press their sides together, and being of a greater Density, would expand them so as to endanger the Life of the Animal *.

1. As much Blood passeth through the Lungs, as through all the rest of the Body: The Circulation is quicker, and Heat greater, and their Texture is extremely delicate; upon all which Accounts they are extremely sensible of any Force either from the too violent Motion or Acrimony of the Blood.

2. Since the Lungs are the first and chief Instrument of Sanguifica-

* See the *Essay concerning the Effects of Air on human Bodies*; printed for Jacob Tonson.

tion,

tion, the Animal that has that Organ faulty, can never be duly nourish'd, nor have the Vital Juices, (which are all deriv'd from the Blood) in a good State; and this is true, understanding the Lungs only as an Instrument of Digestion, and abstracting from an acrid and purulent Matter, that mixeth with the Blood in such as have their Lungs ulcerated; therefore such as have a faulty Circulation through the Lungs, ought to eat very little at a time, because the Increase of the quantity of fresh Chyle must make that Circulation still more uneasy; which indeed is the Case of Consumptive and some Asthmatick Persons, and accounts for the Symptoms they are troubled with after eating: Therefore the great Rule of Diet for Consumptive People, and upon which the whole Cure depends, is taking their Aliment in small quantities at a time. It happens very often unfortunately for Asthmatick
Per-

Persons that they have voracious Appetites, and consequently for want of a right Sanguification are often * Leucophlegmatick.

3. The Choice as well as Quantity of Diet, is of great Importance to such as have weak Lungs, for it was observ'd † that the Chyle in the Thoracick Duct retain'd the original Taste of the Aliment, which not being yet converted into Blood, and intirely subdued by Circulation, must operate upon the Lungs into which it enters in this Condition, according to its original Qualities. The Texture of the Lungs is extremely delicate, and besides, being the chief Instrument of Sanguification, and acting strongly upon the Chyle to bring it to an Animal Fluid, must be reacted upon as strongly.

4. Good Air assists the Digestion, as it is an Instrument of Sanguifica-

* *Pale and phlegmatick, bloated.*

† Chap. I. Prop. VII. 5.

tion in the Lungs. It is known by Experience, that People both lose and recover their Appetites in different kinds of Air.

P R O P. III.

The Chyle is not perfectly assimilated into Blood by its Circulation through the Lungs; for it is known by Experiments of Blood-letting, that several Parts of it remain unmix'd with the Blood, swimming a-top like an oily Substance, even eight Hours after repast; and no doubt this Digestion, as well as that through the Alimentary Duct, is different in different Subjects.

P R O P. IV.

After the Chyle has pass'd through the Lungs, Nature continues her usual Mechanism, to convert it into Animal Substances, during its Circulation with the Blood, *viz.* by intimately mixing the Parts of the Aliment,

ment, with those of the Animal Juices, by the Action of the solid Parts.

The Mixture of Blood and Chyle, after its Circulation through the Lungs, being brought back into the left Ventricle of the Heart, is drove again by the Heart into the * Aorta, through the whole Arterial System; every Particle of the Body receives some Branch from the Aorta, except some of the solid Parts of the Liver. The Arteries are elastick Tubes, endued with a contractile Force, by which they squeeze and drive the Blood still forward, it being hinder'd from going backward by the Valves of the Heart. They are † conical Vessels, with their Bases towards the Heart; and as they pass on, their Diameters grow still less and less: Consequently the Celerity of the Motion diminishes by the Increase of the Friction of the Fluid against the sides

* *The great Artery, which proceeds from the left Ventricle of the Heart, and carries the Blood through the Body.*

† *Tapering, diminishing by degrees.*



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C O N T N E N T S.

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THE
EXPLANATION
OF SOME
CHYMICAL TERMS

Used in the following

ESSAY.



THE following Treatise is chiefly design'd for Persons not bred up in the Profession of Physick, it is necessary to give a general Notion of the Meaning of some Chymical Words that frequently occur in it.

The Principles of Natural Bodies, according to the Chymists, are Water, Earth, Oil, Salt, Spirit, of all which every one has some general Notion; but the Diversity of the Names and Qualities of Salts and Spirits occasions some Confusion in the Minds of such as are ignorant of Chymistry.

The Chymists define Salt from some of its Properties, to be a Body fusible in the
a Fire,

The *EXPLANATION*

Fire, congealable again by Cold into brittle Glebes, or Cryftals, foluble in Water fo as to difappear, not malleable, and having fomething in it which affecteth the Organs of Taffe with a Senfation of Acrimony or Sharpnefs. Of Native Salts there are,

Firft, Sea-Salt and Sal Gemmæ, or Rock-Salt, which are of the fame Nature. The Firft in all Appearance being a Solution of the Second in the Water of the Ocean; thefe two are perfect Salts, fixt and immutable by any Power in Animal Bodies; for the other Salts are never found in the Urine of any Animal that fwallows them down, but Sea-Salt is always found in the Urine of every Animal that takes it, and in no other.

Secondly, Sal Nitre, or Sal Petre, which is more eafily diffolv'd by Fire, and lefs eafily by Water than any other Salt, it is cold, and affects the Tongue like a faltifh Ice: It feems to be of a middle Nature, between Foffil and Animal, being producible from Animal Excrements intermix'd with vegetable Salts.

Thirdly, Sal Ammoniac of two Sorts, the ancient described by *Pliny* and *Dioscorides*, no more to be found; and the modern, which is a Compound of Foffile, Animal, and Vegetable Salt. This Salt cools Water; it is fix'd in a gentle Fire, and fublimes in a great one; its Taffe is quicker than that of common Salt, refembling that of Urine.

Fourthly,

Of some Chymical T E R M S.

Fourthly, Borax, a Fossile Salt of a sweetish Taste, it promotes the Fusion of Metals.

Fifthly, Alum, which, tho' no pure Salt, has most of the Properties of Salts, being soluble in Water, &c.

Salts are divided into Acid and Alkaline: Of Acid or Sour, one has a Notion from Taste; Sourness being one of those simple Ideas, which one cannot more plainly describe. What being mix'd with an Acid causeth an Effervescence, is call'd an Alkali.

Effervescence, in the Chymical Sense, signifies an intestine Commotion, produced by mixing two Bodies together, that lay at rest before; attended sometimes with a hissing Noise, Frothing, and Ebullition: For Example, let us place in the first Class, Acids, as Vinegar, Juice of Limons, Juice of Oranges, Spirit of Nitre, Spirit of Alum: In the second Class, other saline Substances obtain'd from Animals and Vegetables, by Distillation, Putrefaction, Calcination, as Spirit of Urine, Spirit of Harts-horn, Salt of Tartar; because the Substances of the second Class being mix'd with the Substances of the first, raise an Effervescence, they are call'd Alkalis. There is a third Class of Substances, commonly call'd Absorbents, as the various kinds of Shells, Coral, Chalk, Crabs-eyes, &c. Which being mix'd with the first Class, likewise

The EXPLANATION

raise an Effervescence, and are therefore call'd Alkalis, tho' not so properly; for they are not Salts, and have nothing common with the second Class, except this Quality of fermenting with Acids.

It is observable, that a violent Cold, as well as Heat, may be produced by this Ebullition; for if Sal Ammoniac, or any pure volatile Alkali dissolv'd in Water be mix'd with an Acid, an Ebullition with a great Degree of Cold will ensue, therefore, I think (with leave of the Chymists) Effervescence not so proper a Word to express this intestine Motion. There is another Criterion of Acid and Alkali by the Change of Colour which they produce in some Bodies; for Example, those Liquors, which being pour'd to the Syrup of Violets, turn it red, are Acids; those which change it into a green Colour, are reckon'd Alkalis. Thus Oil of Vitriol turns Syrup of Violets red, and Oil of Tartar green.

The Word Alkali, comes from an Herb call'd by the *Egyptians*, Kali. This Herb they burnt to Ashes, boil'd them in Water; and after having evaporated the Water, there remain'd at the bottom a white Salt, this they call'd Sal Kali, or Alkali. It is corrosive, producing Putrefaction in Animal Substances, to which it is apply'd.

Substances which are not perfectly Acid, but naturally turn so, I call Acescent.

Sub-

Of some Chymical T E R M S.

Substances which are not perfectly Alkaline, but naturally turn so, I call Alkalescent.

These are not Qualities in Bodies merely imaginary, but have very different and contrary Effects upon Human Bodies.

Salts, which are neither acid nor alkaline, are call'd Neutral; so are Sal Ammoniac, Sea-Salt, Sal Gemmæ, Borax, Alum, Nitre, which as long as they retain their saline Quality, are neither acid nor alkaline. But the Chymical Products of them all (except Sal Ammoniac) are generally Acid.

Fix'd Salts are such as sustain the Fire without flying away.

Volatile Salts fly away with a small Heat, affecting the Nose with an urinous Smell.

There are volatile and fix'd Alkalis.

The essential Salts of Plants are such as shoot upon the Sides of the Vessels, which contain their express'd Juices.

In Distillations, what trickles down the Sides of the Receiver in certain unctuous Rivulets, if it will not mix with Water, it is call'd Oil, if it will mix with Water, it is call'd Spirit: Spirits are either inflammable, or not inflammable; the last either Acid or Alkaline. Alkaline Spirits, are subtile volatile Liquors, that run in Veins down the Sides of the Receiver
in

The EXPLANATION

in Distillations, which will not take Fire, mix with Water, and contain some Alkaline Salt, as Spirit of Hartshorn. Such are obtain'd from all the Parts of Animals, from all Plants by Putrefaction, and from the pungent kind, as Mustard, Horse-Radish, &c. without it. Acid Spirits are subtile Liquors which come over in Distillations, not inflammable, miscible with Water, such are obtain'd from Vegetables distill'd with Water, and likewise from Fossils; inflammable Spirits are subtile volatile Liquors which come over in Distillations, miscible with Water, and wholly combustible; such Spirits are obtainable from Plants by a previous Fermentation, and not without it. By the Spirit of a Plant or that of an Animal, we understand that pure elaborated Oil, which by reason of its extreme Volatility exhales spontaneously, in which the Odour or Smell consists.

Sope is a Mixture of a fix'd Alkaline Salt and Oil, in common Use its Virtues are cleansing, penetrating, attenuating and resolving. Any Mixture of any oily Substance with Salt may be call'd a Sope.

Bodies of this Nature are call'd Saponaceous.

INTRO-



INTRODUCTION.



HE who would skilfully treat of the Nature and Choice of different sorts of Aliment, ought to draw his Observations from the following Particulars. *First*, From the Alterations which the Aliment undergoes in its Passage into the Blood. *Secondly*, From the Alteration it undergoes during its Circulation with the Blood. *Thirdly*, From the Nature and most simple Analysis of Vegetable Substances. *Fourthly*, From the Nature and most simple Analysis of Animal Substances. *Fifthly*, He ought to treat of the Effects of different sorts of Alimentary Substances upon the Fluids and Solids of a Human Body. *Sixthly*,

INTRODUCTION.

Sixthly, Of the different Intentions to be pursued in the Choice of Aliment in different Constitutions. Tho' I have neither Time, Ability, nor Observations sufficient to handle those Particulars so fully as they deserve, I hope at least to give a Specimen how they ought to be treated.

This is agreeable to the Doctrine of *Hippocrates*, who tells you in his first Book of Diet, that to write duly upon it, one must understand the Nature of Aliment, and of the Person it is given to.

For the Ease of the Reader I have set down every thing in distinct Propositions, with Inferences and Observations; the first in *Roman*, the other in common Numbers.





A N
E S S A Y

CONCERNING

The Nature of Aliments, and the Choice
of them, according to the different
Constitutions of Human Bodies.

C H A P. I.

*Observations drawn from the Altera-
tions which the Aliment undergoes
in its passage into the Blood.*

P R O P. I.



MASTICATION * is a
very necessary Preparation
of solid Aliment, without
which there can be no good

Digestion.

* *Chewing.*

B

By

By Chewing, solid Aliment is divided into small Parts; in a human Body, there is no other Instrument to perform this Action, but the Teeth. By the Action of Chewing, the Spittle and Mucus are squeez'd from the Glands, and mix'd with the Aliment, which Action if it be long continued, will turn the Aliment into a sort of Chyle. The Spittle is an active Liquor, immediately deriv'd from the arterial Blood. It is * saponaceous, as appears by its frothing, and likewise by Distillation, and consequently is attenuating, resolving, penetrating, and cleansing. After long Abstinence, it is extremely sharp, and copious; it ferments with the juices of Vegetables, and consequently disposeth them to be chang'd into inflamable Spirits; it discovereth its Virtues in several Chirurgical Uses. Besides, in the Action of Chewing, the Mucus mixeth with the

* *Soapy. Vide* Explanation of the Chymical Terms.

Aliment: The Mucus is an Humour different from the Spittle; and the great Quantity of Air which it contains, helps to dissolve the Aliment. The necessity of Spittle to dissolve the Aliment, appears from the contrivance of Nature in making * the salivary Ducts of Animals, which ruminates or chew the Cud, extremely open. Such Animals as swallow their Aliment without Chewing, want salivary Glands; and Birds have them placed in their Maw. There are Instances of Men who swallow'd their Meat whole, but ruminated or chew'd the Cud afterwards. Rumination seems to be given to Animals to enable them at once to lay up a great store of Food and afterwards to chew it. And Animals ruminates more upon Hay than Grass, the Food being harder. From all which Observations it appears, that the Solution of the Aliment by Mastication is very necessa-

* *The Canals which separate the Spittle.*

ry; and that without it the Aliment could not be duly disposed for the other Changes which it receives as it passeth through the* Alimentary Duct.

1. A great loss of Spittle causeth a decay of Appetite. This has been confirm'd by Experience in several, who have made it their constant Custom to chew Mastick; chewing and smoking of Tobacco is only proper for phlegmatick People.

2. The Humour of Salivation is not properly Spittle, but putrified Blood.

3. The Depravation of the Instruments of Mastication, by a paralytical Disposition, or by the want of Teeth, as in old Men and Infants, is a natural Indication of a liquid Diet, as of Milk and Broths, and even such of them as take Solids ought to chew in order to make an Expression of the Spittle.

* *The whole Passage from the Mouth to the Anus.*

P R O P. II.

The Change which is made of the Aliment in the Stomach is effected by * Attrition of the solid Parts, or inward Coat of the Stomach, and the Action of a dissolvent Liquor assisted with Heat.

The Liquor in the Stomach is a Compound of that which is separated from its inward Coat; of the Spittle, which is almost continually swallow'd, and the Liquor which distills from the Gullet. By the help of this Liquor, and the constant Attrition of the solid Parts, the Aliment is dissolv'd by an Operation resembling that of making an Emulsion; in which Operation the Oily parts of Nuts and Seeds being gently ground in a marble Mortar, and gradually mix'd with some watery Liquor, are dissolv'd into a sweet, thick, turbid,

* *Rubbing, Grinding.*

milky Liquor, resembling the Chyle in an Animal Body. That the Stomach in Animals grinds the Substances which it receives, is evident from the Dissection of Animals, which have swallow'd Metals, which have been found polish'd on the side next the Stomach. Birds being without Teeth to chew their Aliment, have strong and nervous Stomachs, to make this Attrition the stronger; and this motion in them hath been both seen and heard. The Rugæ or Plies of the inward Coat of the Stomach, contribute to the detaining the Aliment in the Stomach. The Heat in Land Animals assists likewise in the Solution of the Aliment, but not much; for Fishes have a strong Digestion without it, tho' by the trial of the Thermoscope, they have more heat than the Element which they swim in. It has been shew'd before that the Spittle is a great Dissolvent, and there is a great quantity of it in
the

the Stomach, being swallow'd constantly, at least in Sleep. He who eats a Pound of Bread swallows at least as much Spittle as Bread. This Liquor of the Stomach in a sound State is not Acid, for it has been found by Experiments, that Pearls have pass'd through Cocks and Hens undissolv'd.

1. The Liquor of the Stomach, which with fasting grows extremely sharp, and the quick Sensation of the inward villous Coat of the Stomach, seem to be the cause of the Sense of Hunger.

2. Such as have, by the use of spirituous Liquors, weaken'd and destroy'd some of the solid parts of the Stomach, can neither recover a good Appetite nor right Digestion; for this inward villous Coat when destroy'd cannot be restor'd.

3. This Liquor of the Stomach may (by reason of some saline Acrimony) acquire some determined Quality, and affect human Creatures with

Appetites of other Animals of unusual things, which in that case they can take without hurt; or it may likewise occasion an exorbitant Appetite of usual things, which they will take in such quantities till they vomit them up like Dogs, from whence it is call'd Canine; in the first case the Organs of Taste are vitiated; both Diseases are cur'd by Diet, opposite to this Acrimony, whether Alkaline, Acid or * Muriatick.

4. Thirst and Hunger denote the State of the Spittle, and Liquor of the Stomach. Thirst is the sign of an Acrimony commonly † Alkalescent or Muriatick.

5. A paralytical Disposition of the Nerves of the Stomach, a deprav'd Condition of the Liquor of the Stomach, but chiefly something viscous, fat, and oily remaining there, destroys the Sensation of Hunger.

* *Briny.*

† *See Explanation of the Chymical Terms.*

6. The Action of the Stomach is totally stopp'd by too great Repletion, in which case both the Orifices of the Stomach by a necessary Mechanism close, and neither will admit nor expel any thing. Consequently Relaxing, as by warm Water, is the only proper Expedient.

The Signs of the Functions of the Stomach being deprav'd, are Pains in the Stomach many Hours after Repast, * Erućtations either with the Taste of the Aliment, Acid, Nidoroſe, or Fœtid, reſembling the Taste of rotten Eggs; Inflations, or the Senſation of Fulneſs; Sickneſs, Hiccup, Vomiting, a Flushing in the Countenance, Foulneſs of the Tongue. In general, whatever be the State of the Tongue, the ſame is that of the inward Coat of the Stomach. When the Taste of the Mouth is bitter, it is a Sign of a Redundance of a bilious Alkali, and demands a quite

* *Belchings.*

An ESSAY concerning
different Diet from the case of Acidity or Sourness.

P R O P. III.

By Digestion in the Alimentary Duct the specifick Difference of all Substances is abolish'd, and the whole Action resembles Putrefaction.

Digestion is a Fermentation begun, because there are all the Requisites of such a Fermentation, Heat, Air and Motion; but it is not a compleat Fermentation, because that requires a greater time than the Continuance of the Aliment in the Stomach. Vegetable Putrefaction resembles very much Animal Digestion. Vegetable Putrefaction is produced by throwing green juicy Vegetables in a Heap in open warm Air, and pressing them together, by which all Vegetables acquire, *First*, A Heat equal to that of a Human Body.
Secondly,

Secondly, A putrid stercoraceous Taste and Odour, in Taste resembling putrid Flesh, and in Smell human Fæces. This putrid Matter being distill'd, affords, *First*, A Water impregnated with an urinous Spirit, like that obtainable from Animal Substances, which Water is separable into Elementary Water, and a volatile Animal Salt. *Secondly*, A volatile oily Alkaline Salt. *Thirdly*, A volatile thick Oil. *Fourthly*, The remainder being calcin'd affords no fixt Salt; in short, every thing happens as if the Subject had not been Vegetable, but Animal. Putrefaction utterly destroys the specifick Difference of one Vegetable from another, converting them into a pulpy Substance of an Animal Nature: Making the same Alteration very near, as if the Vegetable had gone through the Body of a sound Animal; for tho' such an Animal should entirely live upon Acids, no part of
its

its Body affords any acid fix'd Salt. * This is so far true, that even the Herbs taken out of the *Omasus* of ruminating Animals afford the same Contents as putrified Vegetables. But tho' this Action of Putrefaction comes the nearest to Animal Digestion, it so far differs from it, that the Salts and Oils are only detain'd in the Animal Body so long as they remain benign and friendly to it; but as soon as they putrify entirely, are either thrown off, or must produce mortal Distempers.

P R O P. IV.

The Gall is the principal Dissolvent of the Aliment, and when it is peccant or deficient, there can be no right Digestion.

The Bile is of two sorts, the Cystick or that contain'd in the Gall-Bladder, which is a sort of Repository

* *Vide* Philosophical Transactions.

for the Gall, and the Hepatick or what flows immediately from the Liver. The Cystick Gall is thick and intensely bitter, so that one Drop of it will make a whole Pint of Water bitter. The Hepatick Gall is more fluid and not so bitter. There is no other bitter Humour in a Human Body, besides Gall, except the Wax of the Ear. The Gall is not a perfect Alkali, for it does not ferment with an Acid, but it is Alkalescent, entirely opposite to Acescents, and soon corruptible, and convertible into a Corrosive Alkali. It is a saponaceous Substance, being compos'd of an Alkaline Salt, Oil, and Water, all which can be extracted from it. The Bile, like Soap, takes out Spots from Wool or Silk, and the Painters use it to mix their Colours; by this saponaceous Quality, it mixeth the oily and watery Parts of the Aliment together. But tho' the Bile be an Oil, it is not combustible till dry. These

Qualities

Qualities make it a most powerful and proper Dissolvent, which appears by Experience. The Milk in the Stomach of Calves, which is coagulated by the Runnet, is again dissolv'd, and render'd fluid by the Gall in the *Duodenum*. Voracious Animals, and such as do not chew, have a great quantity of Gall, and some of them have the Biliary Duct inserted into the *Pylorus*. It is likewise the chief Instrument (by its Irritation) of the peristaltick Motion of the Guts. Such as have the Bile peccant or deficient are reliev'd by Bitters, which are a sort of subsidiary Gall. The learned *Boerhaave* has found the Gall of an Eel, which is most intensely bitter, a most effectual Remedy in such Cases. The common Symptoms of the Excretion of the Bile being vitiated, are a yellowish Colour of the Skin, white hard Fœces, a Loss of Appetite, a lixivial Urine.

P R O P. V.

The Bile is so acrid, that of itself it could not be admitted into the Lacteal Vessels. Therefore Nature has furnish'd another Humour, *viz.* the pancreatick Juice to temper its Bitterness and Acrimony, after it has done its Office.

The *Pancreas* is a large salivary Gland separating about a Pound of an Humour like Spittle, in twelve Hours. It is probable that this Humour tempers the Acrimony of the Gall, because the Bile mix'd with Spittle loseth its Bitterness in time, and even Wormwood eat with Bread will do so, because it is mix'd with a great Quantity of Spittle. The pancreatick Juice likewise mixeth the Parts of the Aliment rendring the Chyle homogeneous. When the Bile is not separated in the Liver the Fœces are white, but this is not occasion'd

An ESSAY concerning
 sion'd by the Mixture of the pancreatick Juice.

P R O P. VI.

* Acrimony and Tenacity are the two Qualities in what we take inwardly most to be avoided.

The papillous inward Coat of the Intestines is extremely sensible, and when the Acrimony is so great as to affect the solid Parts, the Sensation of Pain is intolerable. The † peristaltick Motion of the Guts, and the continual Expression of the Fluids, will not suffer the least Matter to be apply'd to one Point the least instant of Time; for the smallest quantity of Turpentine or Pitch will stick to the Fingers, but not to the Guts. But this Motion in some Human Creatures may be weak in respect to

* *Sharpness and Glueness.*

† *Alternate Motion of Contraction and Dilatation, commonly tending downwards.*

the Viscidity of what is taken so as not to be able to * propell it, the consequence of which is dangerous, and perhaps fatal to the Life of the Creature. Substances hard, cannot be dissolv'd, but they will pass; but such, whose Tenacity exceeds the Powers of Digestion, will neither pass nor be converted into Aliment. Besides, the Mouths of the ‡ Lacteals may permit Aliment too acrimonious, or not sufficiently attenuated, to enter in People of lax Constitutions, whereas their Sphincters will shut against them in such as have strong Fibres. The Mouths of the Lacteals may be shut up by a viscid † *Mucus*, in which case the Chyle passeth by Stool, and the Person falleth into an || Atrophy.

* *Drive forwards.*

‡ *Vessels which carry the Chyle through the Mesentery.*

† *Snot.*

|| *Decay of Flesh.*

1. Fat or Oil is necessary, as for Animal Motion, so likewise for this peristaltick Motion of the Intestines; and lean People often suffer for want of it, as fat People may by Obstruction of the Vessels. The Fat will melt by strong Motion, as has been found in Horses by hard running.

2. This peristaltick Motion, or repeated Changes of Contraction and Dilatation, is not in the lower Guts, else one would have a continual needing to go to stool. Wind and Distention of the Bowels are Signs of a bad Digestion in the Intestines, (for in dead Animals, when there is no Digestion at all, the Distention is in the greatest Extremity) so likewise are Diarrhœas, which proceed from Acrimony, Laxity of the Bowels, or Obstruction of the Lacteals.

P R O P. VII.

The Mechanism of Nature in converting our Aliment into Animal Substances consists chiefly in two Things. *First*, In mixing constantly with it Animal Juices already prepar'd. *Secondly*, In the Action of the solid Parts as it were churning them together. This is evident, if we consider first the vast quantity of *Saliva* mix'd with the Aliment in chewing: He that eats a Pound of Bread mixeth it very near with as much Spittle, and this separated from Glands that weigh only about four Ounces. Afterwards the same Aliment is mix'd with the Liquor of the Stomach, the Bile and pancreatick Juice, and if we compute the quantity of Bile and Pancreatick, from the Weight of these *Viscera* in respect of the salivary Glands, we shall find still a vastly greater quantity of

these Animal Juices mix'd with the Aliment; this is not all, for when the Chyle passeth through the * Mesentery, it is mix'd with the Lymph (which is the most spirituous and elaborated Part of the Blood) from its Glands: So that the Juices of an Animal Body are as it were † cohobated, being excreted and admitted again into the Blood with the fresh Aliment; all the while the solid Parts act upon the Mixture of Aliment and Animal Juices, so as to make the Mixture more intimate and compleat. Besides, [none of these Animal Juices, except the Liquor of the Intestines, are mix'd with the Fœces of an Animal, which in a sound State are hard: So that one may compute, that a Pound of Bread before it enters the Blood, is mix'd perhaps with four

* *A Membranous part in the Lower Belly, to which the Guts are connected.*

† *New distill'd.*

times the quantity of Animal Juices. The same Oeconomy is observ'd in the Circulation of the Chyle with the Blood, by mixing it intimately with the Parts of the Fluid to which it is to be assimilated.

1. From whence it follows, that an Animal, whose Juices are unfound or solid Parts weak, can never be duly nourish'd; for unfound Juices can never duly repair the Fluids and Solids of an Animal Body, and without a due Action of the solid Parts, they never can be well mix'd. The Stomach, the Intestines, the Muscles of the lower Belly, all act upon the Aliment; besides, the Chyle is not suck'd but squeez'd into the Mouths of the Lacteals by the Action of the Fibres of the Guts: The Mouths of the Lacteals are open'd by the intestinal Tube, affecting a straight instead of a spiral Cylinder; therefore it is plain that the Chyle must be peccant in Quantity or Quality when these

Actions and Organs are too weak; and whatever strengthens the solid Parts must help the Digestion.

2. Diarrhœas and strong Purgations must spoil the first Digestion, because of the great Quantities of Animal Liquids which they expell out of the Body; a vast quantity and variety of Animal Liquors are carried off by Purging: Air, Spittle, *Mucus*, all the Liquors that are separated in the Glands of the Alimentary Duct, both sorts of Bile, the pancreatick Juice, Lymph, and sometimes Blood, computing the quantity of these Secretions, makes it plain that the whole Juices may be carried off by Purging; and when those Liquors are expell'd out of the Body, which by their mixture convert the Aliment into an Animal Liquid, this cannot so well be perform'd.

3. The peristaltick Motion of the Intestines is the last that ceaseth in an Animal Body, for it remains after

ter the Motion of the Heart is ceas'd. By the Entry of the Chyle and Air into the Blood, by the Lacteals, the Animal may again revive.

The Obstruction of the Glands of the Mesentery is a great Impediment to Nutrition, for the Lymph in those Glands is a necessary Constituent of the Aliment before it mixeth with the Blood; and for the same Reason young Animals are most and best nourish'd, for the Mesenterick Glands are largest in the vigour of Youth; in old Age they vanish, and are liable to Obstructions: Therefore scrophulous Persons can never be duly nourish'd; for such as have Tumors in the Parotides often have them in the Pancreas and Mesentery.

4. In tabid Persons Milk is the best Restorative, for it is Chyle already prepar'd; the Aliment passeth very quick into the Paps of any Animal that gives Milk; for if a Nurse after being suck'd dry eats Broth, the

Infant will suck the Broth almost unalter'd.

5. The Chyle by reason of the Smoothness of its Particles is white, it grows more gray in the Thoracick Duct, where it still retains the Flavour of the Aliment.

6. Animals, which take a large quantity of Aliment by the Mouth, may be less nourish'd than those that take a smaller; for according to the Force of the * Chylopoetick Organs, a larger or less quantity of Chyle may be extracted from the same quantity of Food.

Astriction of the Belly is commonly a sign of strong Chylopoetick Organs.

P R O P. VIII.

The most subtile part of the Chyle passeth immediately into the Blood by the † absorbent Vessels of the Guts,

* *Which makes Chyle.* † *Which suck in.*

which

which discharge themselves into the Mesaraick Veins; their Largeness and Number demonstrate this, for they are numerous and vastly larger than their correspondent Arteries; besides, wherever there are * Emissaries, there are absorbent Vessels, *ex. gr.* in the Skin, by the absorbent Vessels of which Mercury will pass into the Blood.

Birds, which have strong and large Breasts, small Bellies, and their Ribs upon their Backs, have no Lacteals nor † Thoracick Duct, and their Aliment passeth immediately into the Mesaraick Veins. If one considers the Capacity of the Thoracick Duct, and the Slowness of the Passage of the Aliment by the Lacteals through it, and at the same time the great quantity of some Liquors, as of Chalybeat Water, which in some pass in a small time by Urine; by an easy

* *Vessels which throw out a Liquid.*

† *A Canal through which the Chyle passeth from the Lacteals into the Blood.*

Calculation he will be able to demonstrate that such a quantity could not pass into the Blood by the Thoracick Duct in so short a time.

Therefore when the Intention is to give an immediate Refreshment to the Spirits, as after great Abstinence and Fatigue, thin or liquid Aliment is the properest, and for the same reason Chalybeat Waters seem to be a proper Remedy in Hypochondriacal Cases; their subtle and divided Particles are taken immediately into the Mesaraick Vessels, and carried straight into the Liver and Spleen.

C H A P. II.

Observations drawn from the Circulation of the Chyle with the Blood.

P R O P. I.

THE Chyle of it self cannot pass through the smallest Vessels
(for

(for it neither will pass by Urine nor Sweat) therefore it cannot nourish the Animal, till it is converted into Blood; and it is converted into Blood by the Mechanism of Nature above describ'd, *viz.* by intimately mixing it with the Particles of the Liquor, to which it is to be assimilated, as will appear by what follows.

P R O P. II.

The Lungs are the first and chief Instrument of * Sanguification.

The Chyle first mixeth with the Blood, in the Subclavian Vein, and enters with it into the Heart, where it is very imperfectly mix'd, there being no Mechanism nor Fermentation by extraordinary Heat, &c. to convert it immediately into Blood, which is first effected by the Lungs. The Wind-pipe divides it self into a great num-

* *Making of Blood.*

ber of Branches called Bronchia, these end in small Air-Bladders dilatable and contractible, capable to be inflated by the Admission of Air, and to subside at the Expulsion of it. The Pulmonary Artery and Vein pass along the Surfaces of these Air-Bladders in an infinite number of Ramifications. A great number of those Air-Bladders form what we call Lobuli, which hang upon the Bronchia, like Bunches of Grapes upon a Stalk. These Lobuli constitute the Lobes, and the Lobes the Lungs. Let us see what effect an Engine so contriv'd will have upon the crude mixture of Blood and Chyle: first, as the Blood and Chyle pass together through the * Ramifications of the Pulmonary Artery, they will be still more perfectly mix'd; a red Liquor and a white Liquor, passing only through one Tube, will both retain their original Colours; but if this

* *Branchings.*

Pipe is divided into Branches, and these again subdivided, the red and white Liquors, as they pass through the Ramifications, will be more intimately mix'd, and both Colours will be blended together; the more Ramifications, the Mixture will be the more perfect; but this is not all, for as this Mixture of Blood and Chyle passeth through the Arterial Tube, it is press'd by two contrary Forces, that of the Heart driving it forward against the sides of the Tube, and the Elastick Force of the Air pressing it on the opposite side of those Air-Bladders; along the Surface of which (as was said before) this Arterial Tube creeps. By those two opposite Forces, the parts of the Liquor are compress'd together, and as it were churn'd, and more intimately mix'd. Moreover by the alternate Motion of those Air-Bladders, whose Surfaces are by turns freed from mutual Contact, and by a sudden Subsidence meet again by the
ingress

ingress and egress of the Air; the Liquor is still farther attenuated, dissolv'd, and chang'd into a * homogeneous Fluid.

1. The Force of the Air upon the Pulmonary Artery is but small, in respect of that of the Heart, but it is still something; and whatever the effect of it be, it increaseth, and diminisheth with the Gravity of the Air, to which the † Elasticity is proportional.

As to the admittance of the weighty and elastick Parts of the Air into the Blood, through the Coats of the Vessels, it seems contrary to Experiments upon dead Bodies. The spumous and florid state, which the Blood acquires in passing through the Lungs, is easily accounted for, from its own Elasticity, and the violent Motion before describ'd; the Aerial Particles in the Blood and Chyle expanding themselves. That the Air in the Blood-

* *Of one kind.* † *Spring.*

Vessels of live Bodies has a Communication with the outward Air, I think seems plain from the Experiments of human Creatures being able to bear Air of much greater Density in diving, and of much less upon the tops of Mountains, provided the Changes be made gradually; otherwise the Air within the Vessels being of a less Density, the outward Air would press their sides together, and being of a greater Density, would expand them so as to endanger the Life of the Animal *.

1. As much Blood passeth through the Lungs, as through all the rest of the Body: The Circulation is quicker, and Heat greater, and their Texture is extremely delicate; upon all which Accounts they are extremely sensible of any Force either from the too violent Motion or Acrimony of the Blood.

2. Since the Lungs are the first and chief Instrument of Sanguifica-

* See the *Essay concerning the Effects of Air on human Bodies*; printed for Jacob Tonson.

tion,

tion, the Animal that has that Organ faulty, can never be duly nourish'd, nor have the Vital Juices, (which are all deriv'd from the Blood) in a good State; and this is true, understanding the Lungs only as an Instrument of Digestion, and abstracting from an acrid and purulent Matter, that mixeth with the Blood in such as have their Lungs ulcerated; therefore such as have a faulty Circulation through the Lungs, ought to eat very little at a time, because the Increase of the quantity of fresh Chyle must make that Circulation still more uneasy; which indeed is the Case of Consumptive and some Asthmatick Persons, and accounts for the Symptoms they are troubled with after eating: Therefore the great Rule of Diet for Consumptive People, and upon which the whole Cure depends, is taking their Aliment in small quantities at a time. It happens very often unfortunately for Asthmatick
Per-

Persons that they have voracious Appetites, and consequently for want of a right Sanguification are often * Leucophlegmatick.

3. The Choice as well as Quantity of Diet, is of great Importance to such as have weak Lungs, for it was observ'd † that the Chyle in the Thoracick Duct retain'd the original Taste of the Aliment, which not being yet converted into Blood, and intirely subdued by Circulation, must operate upon the Lungs into which it enters in this Condition, according to its original Qualities. The Texture of the Lungs is extremely delicate, and besides, being the chief Instrument of Sanguification, and acting strongly upon the Chyle to bring it to an Animal Fluid, must be reacted upon as strongly.

4. Good Air assists the Digestion, as it is an Instrument of Sanguifica-

* *Pale and phlegmatick, bloated.*

† Chap. I. Prop. VII. 5.

tion in the Lungs. It is known by Experience, that People both lose and recover their Appetites in different kinds of Air.

P R O P. III.

The Chyle is not perfectly assimilated into Blood by its Circulation through the Lungs; for it is known by Experiments of Blood-letting, that several Parts of it remain unmix'd with the Blood, swimming a-top like an oily Substance, even eight Hours after repast; and no doubt this Digestion, as well as that through the Alimentary Duct, is different in different Subjects.

P R O P. IV.

After the Chyle has pass'd through the Lungs, Nature continues her usual Mechanism, to convert it into Animal Substances, during its Circulation with the Blood, *viz.* by intimately mixing the Parts of the Aliment,

ment, with those of the Animal Juices, by the Action of the solid Parts.

The Mixture of Blood and Chyle, after its Circulation through the Lungs, being brought back into the left Ventricle of the Heart, is drove again by the Heart into the * Aorta, through the whole Arterial System; every Particle of the Body receives some Branch from the Aorta, except some of the solid Parts of the Liver. The Arteries are elastick Tubes, endued with a contractile Force, by which they squeeze and drive the Blood still forward, it being hinder'd from going backward by the Valves of the Heart. They are † conical Vessels, with their Bases towards the Heart; and as they pass on, their Diameters grow still less and less: Consequently the Celerity of the Motion diminishes by the Increase of the Friction of the Fluid against the sides

* *The great Artery, which proceeds from the left Ventricle of the Heart, and carries the Blood through the Body.*

† *Tapering, diminishing by degrees.*

of the Tubes: Without this Motion, both the Blood and the Chyle would be converted into one solid Mass; but on the contrary by the continuance of it, the Fluid being compress'd by the sides of the Tube, especially in the small Vessels, where the Points of Contact are more, the Blood and Chyle are still more intimately mix'd, and by Attrition or Friction attenuated; by which the Mixture acquires a greater degree of Fluidity and Similarity, or Homogeneity of Parts. Therefore,

1. Good Blood, and a due Projectile Motion or Circulation are necessary to convert the Aliment into laudable Animal Juices. Hence appears the Necessity of Exercise (which increaseth the Elasticity of the solid Parts) towards good Digestion.

2. The Strength of the Aliment (by which I understand its Resistance to the solid Parts) ought to be proportion'd to the Strength of the solid Parts;

Parts; and as Animals that use a great deal of Labour or Exercise, have their solid Parts more elastick and strong, they can bear and ought to have stronger Food, too thin Nourishment being quickly dissipated by the vigorous Action of the solid Parts. The Neglect of this Rule is the Occasion of great Diseases, the Substance to be ground or prepared ought to be proportion'd to the Strength of the Engine.

3. The Defects of the first Concoction are not to be mended by the second; for if the Chyle passeth into the Blood in a bad State, as the force of Fibres, which contribute to the second Digestion, is limited, it is not sufficient to convert a peccant Liquor, into laudable Animal Juices.

P R O P. V.

The Aliment, as it circulates through an Animal Body, is reduc'd almost to an imperceptible Tenuity, before it can serve the Animal Purposes.

The Blood in live Animals, consists of red Globules, swimming in a Serum or watery Liquor. The smallest Vessels, which carry the Blood or red Fluid by lateral Branches, separate the next thinner Fluid or Serum, the Diameters of which lateral Branches are less than the Diameters of the Blood-Vessels, and will not in a healthy State admit the red Fluid. Such may be call'd Serous Arteries. Those Serous Arteries emit lateral Branches, which carry a Lymph, a Liquor still more limpid than Serum, and from the Liquor which they carry may be call'd, Lymphatick Arteries, transmitting their Liquor into the Lymphatick Veins; those Lymphatick Arteries will not admit Serum. How far this Progression goes is not certain; ten capillary Arteries in some parts of the Body, as in the Brain, are not equal to one Hair; and the smallest Lymphatick Vessels are a hundred times smaller than the
 smallest

smallest Capillary Artery. What Mechanism is that which can attenuate a Fluid compounded of the Ingredients of Human Aliment, as Oil, Salts, Earth, Water, so as to make it flow freely through such Tubes, without obstructing or breaking them?

1. Hence one can easily perceive the Inconveniency of Viscidity which obstructs, and Acrimony that destroys the Capillary Vessels.

2. Obstructions must be most incident to such Parts of the Body, where the Circulation and the elastick Force of the Fibres are both smallest, and those are the Glands which are the Extremities of Arteries form'd into Cylindrical Canals.

3. Hence too solid or viscous Aliment is hurtful to scrophulous Persons.

P R O P. VI.

The Fluids and Solids of an Animal Body demand a constant Reparation.

An Animal, in order to be moveable, must be flexible, and therefore is fitly made of separate and small solid Parts replete with proper Fluids. The whole Body is nothing but a System of such Canals, which all communicate with one another, mediately or immediately (for a Lymphatick Vessel communicates with the Artery, by the intermediate Gland.) In this moveable Body the fluid and solid Parts must be consum'd; by the muscular Motion, and the perpetual Flux of the Liquids, a great part of the Liquids are thrown out of the Body by proper Emissaries, and the smaller Solids are likewise rubb'd off, mix'd with the Fluids, and in that form exhal'd. Therefore
both

both Fluids and Solids demand a constant Reparation.

1. The Quantity of Solids not morbid in an Animal Body is very small, as appears by Atrophies, or Decays, and likewise by Microscopes; those Solids are entirely Nervous, and proceed from the Brain, and Spinal Marrow, which by their bulk appear sufficient to furnish all the Stamina or Threads of the solid Parts. The Solids are originally form'd of a Fluid, from a small Point, as appears by the gradual Formation of a Fœtus. The Solids and Fluids differ only in the Degree of Cohesion, which being a little increas'd, turns a Fluid into a Solid. How the Fluids are repair'd, has been already explain'd. The Nutrition of the Solids is somewhat more obscure.

P R O P. VII.

Nutrition of the Solids is perform'd by the circulating Liquid in a due degree

gree of Heat and Tenuity in the smallest Vascular Solids.

The Fluids and Solids of an Animal Body are easily transmutable into one another. The White of an Egg (a Fluid resembling the Serum of the Blood, and of which a whole Animal is made) will coagulate and turn Solid by a moderate Heat, and the hardest of Animal Solids are resolvable again into Gellies.

As the White of an Egg by Incubation, so can the Serum by the Action of the Fibres be still more and more * attenuated. A Fluid moving through a flexible Canal, when the Canal grows extremely small and slender, by its Friction, will naturally lengthen, and as it were wire-draw the Sides of the Canal, according to the Direction of its Axis; and as the Canal is lengthen'd or wire-drawn, it grows still smaller and slenderer, so as that the

* *Made thin.*

evanescent * Solid and Fluid will scarce differ, and the Extremities of these small Canals will by Propulsion be carried off with the Fluid continually, and likewise continually repair'd, and new ones made in their room. The Force of the Fluid will likewise separate the smallest Particles which compose the Fibres, so as to leave vacant Interstices in those Places where they coher'd before, which vacant Places will be again fill'd up by Particles carried on by the succeeding Fluid (as a Bank by the Mud of the Current) and which of course must be reduced to that Figure which gives the least Resistance to the Current, and consequently must apply themselves to the inward Surface of the Canal, so as to fill up the Interstices, and to preserve the Tube, the System of Tubes, that is, the Animal entire.

* *Vanishing, growing extremely small.*

1. Those Tubes which are most recently made of Fluids are most flexible, and most easily lengthen'd; such Tubes as have often suffer'd this Force grow rigid, and hardly more extendible therefore.

2. An Animal the nearer to its Original, the more it grows.

3. To this Motion of * Elongation of the Fibres, is owing the Union or Conglutination of the Parts of the Body, when they are separated by a Wound.

4. From the foregoing Doctrine it is easy to explain the Formation of the most solid Parts of the Body, for when the Fluid moves in several small Vessels, which by the Contact of their Sides stop the Current of the Fluid, those Canals by degrees are abolish'd and grow solid, several of them united grow a Membrane, these Membranes further consolidated become Cartilages, and Cartilages,

* *Lengthening.*

Bones; consequently, an Animal the nearer it is to its Original, the more Pipes it hath, and as it advanceth in Age still the fewer. Many of our Vessels degenerate into Ligaments, the very Sutures of the Skull are abolish'd in old Age.

5. Many practical Rules may be drawn from the foregoing Doctrine, for the Diet of Human Creatures according to their different States of Life and the Condition of the Solids; it is evident that the Diet of Infants ought to be extremely thin, such as lengthens the Fibres without Rupture; yet ev'n in a young Animal, when the Solids are too lax (the Case of rickety Children) the Diet ought to be gently astringent.

From this Doctrine it appears how detrimental acrimonious Aliment must be to such as have any Sore, Ulcer, Wound, &c. because Healing is perform'd by the Elongation of the Fibres; those tender Fibres are destroy'd by Acrimony. The

The Aliment likewise ought to be different, according to the State of the Solids, in Animals full grown: tho' an Animal arrives at its full Growth at a certain Age, perhaps it never comes to its full Bulk till the last Period of Life. The * *Membrana adiposa* invests almost every Part of the Body, so that there is hardly any Fibre but is sheath'd with a Part of it. This Membrane separates an oily Liquor call'd Fat, necessary for many Purposes of Life; when the Fibres are lax, and the Aliment too redundant, great part of it is converted into this oily Liquor, all the superfluous Weight of an Animal beyond the Vessels, Bones and Muscles is nothing but Fat; but the Conversion of the Aliment into Fat is not properly Nutrition, which is a Reparation of the Solids and Fluids; and Fat, properly speaking, is

* *A Membrane which contains the Fat.*

neither.

neither. But I shall treat more particularly of these Subjects, in their proper Place.

7. The Matter of Nutrition is most subtile, and Nutrition the last and most perfect animal Action; to perform it by the foregoing Propositions, there must be a due degree of projectile Motion or Celerity of Circulation to which Attrition and Heat are proportional. The Heat equal to Incubation, is only nutritious; any thing less or more is insufficient, and the nutritious Juice itself resembles the White of an Egg in all its Qualities. By too weak a Circulation the Aliment approacheth to these Qualities which it would acquire by a small degree of Heat without Motion, becomes viscous, imperfectly mix'd; and the Person in this Condition is subject to all the Accidents of a *Plethora*. By too strong a projectile Motion the Aliment tends to Putrefaction, is dissipated, and the

the solid Parts, instead of being repair'd, are destroy'd: Hence may be deduc'd the Force of Exercise in helping Digestion, and likewise the Rules for regulating the Times and Degrees of it. But those are foreign to my Subject.

P R O P. VIII.

The frequent Repetition of Aliment is not only necessary for repairing the Fluids and Solids of an Animal Body, but likewise to keep the Fluids from the putrescent alkaline State, which they would acquire by constant Motion and Attrition, without being diluted by a fresh Emulsion of new Chyle.

An Animal that starves of Hunger, dies feverish and delirious, as appears by Experiments upon Cats and Dogs, for the most fluid Parts are dissipated, what remains turns * alkaline and

* See Explanation of the Chymical Terms.

corrosive,

corrosive, affecting the tender Fibres of the Brain. The most severe Orders of the Church of *Rome* who practise Abstinence, feel after it, fœtid hot Eructations and Head-Aches. Long Abstinence does not kill by want of Blood; for twenty Days fasting will not diminish its Quantity so much as one great Hæmorrhage. An Animal can never die for want of Blood, while there is a Quantity sufficient for the Continuity of the Pressure, so apply'd to the Brain, as to produce Animal Spirits. Besides, the Diminution both of the Fluids and Solids in an Atrophy, is much greater than what can happen by being starv'd: Therefore Fasting kills by the bad State, not by the insufficient Quantity of Fluids.

Any watery Liquor will keep an Animal from starving very long, by diluting the Fluids, and consequently keeping them from this alkaline State, which is confirm'd by Experience;

rience; for People have liv'd twenty four Days upon nothing * but Water; and the Stories of long Abstinence, where Water has been allow'd, are not incredible.

I. Long Abstinence in hot bilious Constitutions may be the Parent of great Diseases; yet it is more troublesome to acid Constitutions, by the Uneasiness it creates in the Stomach.

C H A P. III.

Observations drawn from the Nature and most simple Analysis of vegetable Substances.

P R O P. I.

ALL Animals are made immediately or mediately of Vegetables, that is by feeding on Vegetables;

* *Vide* Philosophical Transactions.

or on Animals that are fed on Vegetables, there being no Process in *infinitum*.

P R O P. II.

Vegetables are proper enough to repair Animals, as being near of the same specifick Gravity with the Animal Juices, and as consisting of the same Parts with Animal Substances, Spirit, Water, Salt, Oil, Earth; all which are contain'd in the Sap they derive from the Earth, which consists of Rain-Water, Air, putrified Juices of Plants and Animals; and even Minerals, for the Ashes of Plants yield something which the Loadstone attracts.

P R O P. III.

The Sap is diversify'd, and still more and more elaborated and exalted, as it circulates through the Vessels of the Plant.

The Sap when it first enters the Root, and is not subdued by the Action of the Plant, retains much of its own Nature, and has not much of the Vegetable; being earthy, watery, poor, and scarce* oleaginous. The Sap after it has enter'd the Root is more and more elaborated, as it passeth into the Stem, Branches, Leaves, Flowers, Fruit and Seeds. The Juice of the Stem is like the Chyle in an Animal Body, not sufficiently concocted by Circulation, and is commonly subacid in all Plants. This Juice is yielded in great Plenty by Incision, in some Plants. The Juices of the Leaves are, *First*, That obtain'd by Expression, which is the nutritious Juice render'd somewhat more oleaginous; from this Juice proceeds the difference of the Taste of the Leaves of Plants. *Secondly*, Wax which is scrap'd off by the Bees, and is a vegetable Substance. *Thirdly*, Manna,

* Oily.

which

which is an essential saccharine Salt, sweating from the Leaves of most Plants.

The Juices of the Flowers are, *First*, The express'd Juice, a little more elaborated. *Secondly*, A volatile Oil and Spirit, wherein the particular Smell of the Plant resides. *Thirdly*, Honey, exuding from all Flowers, the bitter not excepted; this is gather'd by the Bees, and suck'd in by their Trunks into their Stomachs. The Juice of the Fruit is still the Juice of the Plant, more elaborated. The Juice of the Seed is an essential Oil or Balm, design'd by Nature to preserve the Seed from Corruption. The Bark contains, besides the common Juice, an oily Juice, which sweats out of diverse Plants; when this Juice is in greater plenty than can be exhal'd by the Sun, it renders the Plant ever green. This Oil farther inspissated by Evaporation turns by degrees into Balm, Pitch,

Rosin, &c. Besides all these, there is a peculiar Juice in each Species, not reducible to Water, Oils, Balsam, which may be call'd the Blood of the Plant. Thus some Plants upon breaking their Vessels yield a milky Juice, others a yellow, of peculiar Tastes and Qualities.

1. These are the Ingredients of Plants, before they are prepared by Cookery: Hence it follows, that he who eats a whole raw Plant, or the express'd Juice of it, takes in a greater variety of Substances, than he who feeds on the same Plant prepar'd, or on some of the Parts of it; for all Plants have the most of the foremention'd Ingredients, at least in small Quantities.

2. Vegetables differ from Fossils, and Animals, in that being burnt to Ashes they yield a fix'd Alkaline Salt, which, in those of a sharp Scent and pungent Taste, as Mustard, Onions, &c. is in a very small Quantity.

3. The

3. The Effects of vegetable Substances upon Human Bodies, are more various than those of Animal Substances; and the Mechanism of Plants seems to be more various than that of Animals, for the same Plant produceth as great a variety of Juices, as there is in the same Animal, and different Plants a greater variety, and yet the Aliment of Plants is nearly one uniform Juice; for from the same Soil may be produc'd a great variety of Plants, whereas Animals live upon very different sorts of Substances; both Mechanisms are equally curious, from one uniform Juice to extract all the variety of vegetable Juices, or from such variety of Food to make a Fluid very near uniform, the Blood of an Animal.

4. The specifick Qualities of Plants reside in their native Spirit, Oil, and essential Salt; for the Water, fix'd Salt, and Earth, appear to be the same in all Plants.

The Effects of the foremention'd Ingredients of Plants are as follow: Vegetable Salts are capable of resolving the coagulated Humours of a Human Body, and of attenuating, by stimulating the Solids, and dissolving the Fluids: Salts likewise promote Secretions; Oils relax the Fibres, are Lenient, Balsamick, and abate Acrimony in the Blood. It is by virtue of this Oil, that Vegetables are nutrimental, for this Oil is extracted by Animal Digestion as an Emulsion, and abounds most in Plants of full Growth, and when the Salts and Water are in least abundance. Aromatick Plants, tho' they abound with Oil, yet it is not soft and nutritious; but as it is mix'd with a Spirit, is too heating.

The volatile Salt and Spirit of Vegetables is penetrating, heating, and active, contrary to the Properties of Acids. The Balsams of Plants contain a volatile Salt; such Balsams, when

when depriv'd of their Acids, change into Oils. Wax consists of an acid Spirit of a nauseous Taste, and an Oil, or Butter, which appears white: This Oil is emollient, laxative, and * Anodyne.

Honey is the most elaborate Production of the Vegetable Kind, being a most exquisite vegetable Sope, resolvent of the Bile, Balsamick and Pectoral. Honey contains no inflammable Spirit, before it has felt the Force of Fermentation; for by Distillation it affords nothing that will burn in the Fire.

The Fruits of most Vegetables are likewise Sopes; all Sopes (which are a Mixture of Salt and Oil) are attenuating and deobstruent, resolving viscid Substances; for mere Water dissolves nothing but Salts: but as the Substance of Coagulations is not merely Saline, nothing dissolves them but what penetrates and relaxes at

* *Abating Pain.*

the same time, that is, a Sope, or a Mixture of Oil and Salt.

6. Tastes are the Indexes of the different Qualities of Plants, as well as of all sorts of Aliment: Different Tastes proceed from different Mixtures of Water, Earth, Oil, and Salt; but chiefly from the Oil and Spirit, mix'd with some Salt of a peculiar Nature. A muriatick or briny Taste seems to be produced by a Mixture of an acid and alkaline Salt; for Spirit of Salt and Salt Tartar mix'd, produce a Salt like Sea Salt. Bitter and Acrid differ only by the sharp Particles of the first, being involv'd in a greater Quantity of Oil than those of the last. Acid or Sour proceeds from a Salt of the same Nature, without a Mixture of Oil; in austere Tastes, the oily Parts have not disentangled themselves from the Salts and earthy Parts; such is the Taste of unripe Fruits. In sweet Tastes the acid Particles seem to be so attenuated,

nuated, and dissolv'd in the Oil, as to produce only a small and grateful Titillation. In oily Tastes the Salts seem to be intirely disentangled.

Vegetables have very different Effects on Human Bodies, as they contain acid or alkaline Salts, and are to be us'd according to the different Constitution of the Body at that time, as will appear by what will be said afterwards. All the * Tetrapetalous siliquose Plants are Alkalescent.

P R O P. IV.

Mankind take as Aliment all the Parts of Vegetables, but their properest Food of the vegetable Kingdom, is taken from the farinaceous, or mealy Seeds of some † Culmiferous Plants, as Oats, Barley, Wheat, Rice, Rye, Mays, Panick, Millet;

* *Having Flowers with four Leaves and Pods.*

† *Having long Stems and Heads.*

or of some of the Siliquose Leguminous, as Pease, Beans, &c. Those as they are Seeds (by what was said, Prop. III.) contain the most elaborate part of the Plant, are oily, and therefore proper to make the Animal Emulsion of Chyle; and their Oil is not highly exalted, and hot as that of acrid and aromatical Plants, but mild and benign to human Bodies.

Barley is emollient, moistning and expectorating. Oats have some of the same Qualities. Barley was chosen by *Hippocrates* as proper Food in inflammatory Distempers. Rice is the Food of, perhaps, two Thirds of Mankind; it is most kindly and benign to Human Constitutions, proper for the Consumptive, and such as are subject to Hæmorrhages. Next to Rice is Wheat, the Bran of which is highly Acescent and Stimulating; therefore the Bread that is not too much purged from it, is more wholesome

some for some Constitutions. Rye is more acid, laxative, and less nourishing than Wheat. Millet is diarrhoeick, cleansing, and useful in Diseases of the Kidneys. Panick affords a soft demulcent Nourishment, both for * Granivorous Birds, and Mankind. Mays affords a very strong Nourishment, but more viscous than Wheat. Pease being depriv'd of any aromatick Parts, are mild, and demulcent in the highest degree; but being full of aerial Particles, are flatulent when dissolv'd by Digestion. Beans resemble them in most of their Qualities. All the foremention'd Plants are highly acescent, except Pease and Beans.

The mealy Parts of the foremention'd Plants dissolv'd in Water, make too viscid an Aliment to be constantly us'd, and justly condemn'd by *Hippocrates*: Therefore Mankind

* *That eat Grains.*

have found the means to make them more easy of Digestion, by fermenting, and making some of them into Bread, which is the lightest and properest Aliment for Human Bodies, Leaven, by its acid Salt, dividing the mucous and oily Parts of the Meal.

The next sort of Substances which Mankind feed on, are Fruits of Trees, and Shrubs; these all contain Water or Phlegm, Oil much elaborated, and an essential Salt; upon the different Mixtures of these Ingredients, depend their different Qualities, by which they are sharp, sweet, sour or styptick. Of Fruits, some are Pulpy, others contain'd within a hard Shell; which last are indeed the Seeds of the Plants to which they belong, and contain a great deal of Oil, entangled with earthy Parts and Salts, which oftentimes make them hard of Digestion, and pass the Alimentary Duct undissolv'd. There are other Fruits which contain a great deal of cooling

cooling viscid Juice, combin'd with a nitrous Salt, which sometimes makes them offensive to the Stomach; such are many of the low pomiferous Kind, as Cucumbers, Pumpions; tho' amongst those, Melons, when good, have a rich Juice, and somewhat aromattick; they are diuretick, and there are Instances of their having thrown People into bloody Urine.

Of Alimentary Leaves, the Olera, or Pot-Herbs afford an excellent Nourishment; amongst those are the Cole or Cabbage Kind, emollient, laxative, and resolvent, alkalescent, and therefore proper in Cases of Acidity. Red Cabbage is reckon'd a Medicine in Consumptions and Spittings of Blood. Amongst the Pot-Herbs are some * lactescent Plants, as Lettuce, Endive, and Dandelion, which contain a most wholesome Juice, re-

* *Containing a milky Juice.*

solvent

solvent of the Bile, anodyne and cooling, extremely useful in all Diseases of the Liver. Artichokes contain a rich nutritious stimulating Juice.

Of the Stems of Plants, some contain a fine aperient Salt, and are diuretick and saponaceous; as Asparagus, which affects the Urine with a foetid Smell (especially if cut when they are white) and therefore have been suspected by some Physicians as not friendly to the Kidneys; when they are older, and begin to ramify, they lose this Quality; but then they are not so agreeable.

Of Alimentary Roots, some are pulpy, and very nutritious, as Turnips, Carrots; these have a fattening Quality, which they manifest in feeding of Cattle. There are other Roots which contain an acrid volatile Salt, as Onions, Garlick, Leeks, Radishes, the mildest of these is Celery. Those sorts of Roots are alkalescent
and

and heating, and therefore proper in Cases of Acidity. The Fungus Kind, as Mushrooms or Truffles, afford an alkaline Salt, and much Oil; some of them being poisonous make the others suspicious, if taken in too great Quantities.

There are many vegetable Substances used by Mankind, as Seasonings, which abound with a highly exalted aromattick Oil, as Thyme, Savoury, Marjoram, Basil, Spices: Those are heating, and the most of them hard of Digestion. The most friendly to the Stomach, is Fennel. Mustard, which is us'd in Seasoning, abounds with a most pungent Salt and Oil, extremely active and heating. Sugar is an essential Salt of a Plant, combin'd with an Oil, which renders it inflammable; and therefore it is saponaceous, resolvent, and cleansing.

F P R O P.

P R O P. V.

To give an Account of the Ingredients into which Vegetables resolve themselves by the most simple Operations of Cookery and Chymistry.

The Operations of Cookery and Chymistry fall much short of the vital Force of an Animal Body: No Chymist can make Milk or Blood of Grass; yet it gives some Light to this Subject, to shew into what Parts Vegetables resolve themselves by such simple Operations, as barely separate their Parts without confounding or destroying them.

The two Operations already mention'd, *viz.* making an Emulsion and vegetable Putrefaction resemble Animal Digestion the most.

1. In making an Emulsion, the oily Parts of Vegetables dissolve into a white Liquor, resembling Chyle.

Our

Our vegetable Food consists of mealy Seeds, Fruits, Bread, &c. upon which the Teeth and Jaws act as the Pestle and Mortar; the Spittle, Bile, pancreatick Juice, &c. are the Menstruum, instead of the Water, which the Chymist employs; the Stomach and Intestines are the Press; and the lacteal Vessels the Strainers, to separate the pure Emulsion from its Fœces. The Chyle is white, as consisting of Salt, Oil, and Water of our Food, much levigated or smooth. This likewise constitutes the Whiteness of Emulsions.

2. Vegetable Putrefaction (by what has been mention'd before) turns vegetable Substances into an animal Nature.

3. Amongst the Ingredients of Vegetables, that which constitutes the most spirituous and fragrant Part of the Plant, is what passeth by Perspiration, and exhales by the Action of the Sun. This is as it were the

presiding Spirit of the Plant, from which it draws its peculiar Flavour, and is the most active Principle in the Vegetable. Thus every Plant has its Atmosphere, which have very various Effects on those who stay near them, producing Head-achs, Sleep, Fainting, Vapours; and others, a great Refreshment of the Spirits. It is reported, that in *Brazil* there are Trees which kill those that sit under their Shade in a few Hours. This fragrant Spirit is obtain'd from all Plants which are in the least aromattick, by a cold Still, with a Heat not exceeding that of Summer.

4. If to a Plant you pour hot Water, and let it stand a sufficient time, the Liquor strain'd is call'd the Infusion of the Plant; if the Plant be boil'd in the same Water, the strain'd Liquor is call'd the Decoction of the Plant. The Infusions and Decoctions of Plants contain the most separable Parts of the Plants, and convey not
only

only their nutritious but medicinal Qualities into the Blood. This is plain by many Experiments. The Infusion of *Cassia Fistularis* makes the Urine green. The Infusions and Decoctions of Rhubarb and Saffron, will, in a Quarter of an Hour tinge the Urine with a high Yellow.

5. The most oily Parts are not separated by a slight Decoction, till they are disentangled from the Salts; for if what remains of the Subject, after the Infusion and Decoction, be continu'd to be boil'd down with the Addition of fresh Water, a fat, sapid, odorous, viscous, inflammable, frothy Water will constantly be found floating a-top of the boiling Liquor, which being scumm'd off, and gently dry'd, will flame away in the Fire. This Liquor is a kind of Sope consisting of the Oil and Salt of the Plant.

6. Infusions and slight Decoctions contain more of the Speci-

sick Qualities of the Plant, than these which are more violent; for by a strong Decoction some part of the Taste and Smell fly off every Moment.

7. The Infusion and Decoction, prepar'd as before, being evaporated to a thicker Consistence, according to the several Degrees of Thickness, passeth into a Jelly, * Defrutum, Sapa, Rob, Extract, which contain all the Virtues of the Infusion or Decoction, freed only from some of the watery Parts.

8. The utmost Force of boiling Water is not able to destroy the Structure of the tenderest Plant. The Lineaments of a white Lily will remain after the strongest Decoction.

9. The Extract obtain'd by the former Operation, burnt to Ashes, and those Ashes boil'd in Water, and filtrated, yield a fiery Salt.

* *The express'd Juice, boil'd to a thick Consistence.*

10. The greater Quantity of volatile Salt any Plant contains, which is the Cause of the more pungent in Taste and Odour, the less it affords of this fix'd Alkali: Those fix'd alkaline Salts do not pre-exist in the same Form in the Plant; for acid Plants, as Sorrel, will afford by this Operation an alkaline Salt. Those Salts grow still more fiery and alkaline by a greater degree of Heat. Of all the essential Salts of Plants, that which is in most common Use in Aliment, is Sugar, which rather dissolves Phlegm than increaseth it; for it grows tenacious only by long boiling: It is a Sal Oleosum, for it is both soluble in Water, and fusible in Fire.

11. Another manner of preparing Vegetables, is by expressing their Juices. Those express'd Juices contain the true essential Salt of the Plant; for if they be boil'd into the Consistence of a Syrup, and set in a

cool Place, the essential Salt of the Plant will shoot upon the sides of the Vessels. Those essential Salts of Plants differ, according to the Plant unto which they belong, but are reduc'd into three Classes. *First*, Those of acid, astringent, austere Vegetables, as of unripe Fruits, which resemble the Tartar. *Secondly*, Those of succulent watery Plants, as Endive, Cichory, which afford a fine nitrous kind of Salt, soluble in Water, and very cooling. *Thirdly*, Those from oily, aromattick, and odoriferous Vegetables, which will hardly afford any, till their Oils be extracted from them: From hence it appears, that the express'd Juices of Vegetables, not filtrated very clear, contain their whole Specifick Virtues.

12. In the Preparations of Cookery, the most volatile Parts of Vegetables are destroy'd; if any of them are retain'd, it is in Decoctions which are made *in Balneo*.

Decoctions, when we take the Liquor, contain the Specifick Virtues of the Plants; when we feed upon the Plant, it makes their solid Parts more tender, and deprives them of a great deal of their more subtile Oils.

13. The vascular and solid Parts of Plants are incapable of any Change in the Animal Body; for the Remainder of a strong Decoction, held over a clear Fire, will burn to Ashes, which is true Elementary Earth. The fibrous and solid Parts of Plants, pass unalter'd through the Intestines, and sometimes by sticking there, occasion great Disorders. Grains and Nuts pass often through Animals, unalter'd. The Excrements of Horses are nothing but Hay, and, as such, combustible.

14. Vegetable Substances contain a great deal of Air, which, as they are dissolv'd in the Alimentary Duct, expands itself, producing all the Disorders of Flatulency.

15. There

15. There are other Preparations of Vegetables by Fermentation, whereby they are wrought up into spirituous Liquors, which may be call'd by the general Name of Wines: Such fermented Liquors have quite different Qualities from the Plant itself; for no Fruit, taken crude, has the intoxicating Quality of Wine.

C H A P. IV.

Observations from the Nature and most simple Analysis of Animal Substances.

AN Animal, consider'd in its material Part, cannot well be defin'd from any particular organical Part, which in some Species are wanting, in others, are more than one; nor from its locomotive Faculty, for there are some which adhere to Rocks, and other Places. The Characteristick
of

of an Animal, is to take its Aliment by a voluntary Action, by some Aper-
ture of the Body, which may be
call'd a Mouth, and to convey it into
another call'd the Intestines, into
which its Roots are implanted, where-
by it draws its Nourishment much
after the manner of Vegetables, only
a Vegetable has its Root planted with-
out itself, and an Animal its Root
within itself. A Foetus in the Womb
is indeed nourish'd like a Plant, but
afterwards by a Root planted within
itself; perhaps too an Animal may be
distinguish'd from a Vegetable, in
that its Juices move through the Ca-
nals by a projectile Motion.

P R O P. I.

To give a short Account of the con-
stituent Parts of Animal Substances.

An Animal consists of solid and fluid
Parts, unless one should reckon some
of an intermediate Nature, as Fat,
and Phlegm.

I. The

1. The Solids seem to be Earth, bound together with some Oil; for if a Bone be * calcin'd so, as the least Force will crumble it, being immers'd in Oil, it will grow firm again.

The last Animal Solids are Earth, in its greatest Simplicity; for the Chymists make Vessels of Animal Substances calcin'd, which will not vitrify in the Fire; for all Earth, which hath any Salt or Oil in it, will turn to Glass.

2. The Fluids of Animals are more crude, and resemble those of Vegetables, as they are nearer the Root of the Animal: Thus Chyle may be said to be a vegetable Juice in the Stomach and Intestines, and pour'd upon Blood, it seems like Oil; as it passeth into the Lacteals, it grows still more Animal; and when it has circulated often with the Blood, it is entirely so.

* *Burnt to a Cinder.*

3. Blood is the most universal Juice in an Animal Body, and from which all the rest are deriv'd; the red part of it differs from the Serum, the Serum from the Lymph, the Lymph from the nervous Juice, and that from the several other Humours that are separated in the Glands.

4. Animal Substances differ from Vegetable, in two Things. *First*, In that being reduc'd to Ashes, they are perfectly insipid; all Animal Salts being volatile, fly off with great Heat. *Secondly*, In that there is no sincere Acid in any Animal Juice.

5. And yet the Parts of the one are transmutable into the nutritious Juice of the other. An Animal can nourish a Plant, and a Plant an Animal, by which it seems probable that Vegetables have the Power of converting the alkaline Juices of Animals into Acids; as Animals have the Power of converting the acid Juices of Plants into alkaline Substances.

stances. From the two fore-mention'd Differences of Vegetable and Animal Substances, it follows. *First*, That all animal Diet is alkalescent, or anti-acid. *Secondly*, That animal Substances, containing no fixt Salt, want the Assistance of those for Digestion, which preserve them both within and without the Body from Putrefaction.

6. The constituent Parts of Animals are, *First*, Earth. *Secondly*, A peculiar Spirit analogous to that of Plants. *Thirdly*, Water. *Fourthly*, Salts. *Fifthly*, Oil.

7. The Earth, as was before observ'd, is sincere and immutable.

8. The Spirit is an oily Substance, so attenuated, as to become volatile. This Spirit seems to be distinguish'd in every Species, and Individual; a Blood-Hound will follow the Tract of the Person he pursues, and all Hounds, the particular Game they have in Chase; and the Faculty by which

which they distinguish particular Men, seems to be analogous to ours of distinguishing the different Species of Vegetables by their Scent.

9. Therefore, since the Animals of the wild Kind have their Scent, and consequently this presiding Spirit more high, it is probable that their Juices are more exalted in proportion.

10. Water is the chief Ingredient in all the Animal Fluids and Solids; for a dry Bone, distill'd, affords a great Quantity of insipid Water. Therefore Water seems to be proper Drink for every sort of Animal.

11. The Juices of Animals consist of Water impregnated with Salts of a peculiar Nature (excepting Chyle, which, as was said before, may be reputed a vegetable Juice, and often contains Acids.) These Salts are neither acid, nor perfectly volatile; for, in the Evaporation of Human Blood, by a gentle Fire, the Salt will
not

not rife, but only the Spirit and Water, not perfectly fix'd; for Human Blood, calcin'd, yields no fix'd Salt, nor is it a *Sal Ammoniac*; for that remains immutable after repeated Distillations; and Distillation destroys the ammoniacal Quality of animal Salts, and turns them alkaline; so that it is a Salt neither quite fix'd, nor quite volatile, nor quite acid, nor quite alkaline, nor quite ammoniacal; but soft and benign; approaching nearest to the Nature of a *Sal Ammoniac*. The elementary Salts of Animals are not the same, as they appear by Distillation; these Alterations being made by Fire. Those Salts are of a peculiar, benign, mild Nature, in healthy Persons, who have a vital Force to subdue all the sapid Substances which they feed upon; but, in such who have not that vital Force, or commit some Error in their Diet, these Salts are not sufficiently attenuated, and retain their original Qualities;

lities, which they discover in * Cachexies, Scurvies of several kinds, and other Distempers; the Cure of which chiefly lies in the Choice of Aliment with Qualities opposite to the Nature of these Salts.

I 2. Animal Oil is various, according to Principles inherent in it, but being freed from the Earth, Salts, &c. it is a simple unactive Principle, and the same in all Animals.

I 3. Animal Substances are more easily assimilated into animal Substances; and therefore it seems probable that they are more nourishing to Human Bodies than Vegetable.

The Nature of animal Food must depend upon the Nature, Age, Diet, and other Circumstances of the Animal we feed upon.

Animal Juices, as well as Vegetable, are in their greatest Perfection when the Animal is full grown; young Ani-

* *Ill Habits of Bodies.*

mals participate of the Nature of their tender Aliment, as Sucklings of Milk.

Animal Nourishment differs considerably as the Animal is terrestrial, amphibious, or aquatick. Fishes contain more of animal Salts and Oil, for they corrupt sooner than terrestrial Animals; some Fishes, as the Thornback, when dry'd, taste of *Sal Ammoniac*.

The muscular Fibres of Fishes are generally more small and tender than those of terrestrial Animals, and their whole Substance more watery. Some Fishes, as Whitings, can be almost entirely dissolv'd into Water.

From which Qualities, a Diet of some Fish is more rich and alkalescent than that of Flesh, and therefore very improper for such as practise Mortification. The Inhabitants of Sea-Port Towns are generally prolifick.

The Oils with which Fishes abound often turn rancid, and lie hea-

vy on the Stomach, and affect the very Sweat with a rancid Smell, which is found to be true in some Places, where the Inhabitants live entirely upon Fish.

Notwithstanding the redundant Oil in Fishes, they do not increase Fat so much as Flesh, by reason of their watery Quality.

Water-Fowl abound with the same rancid Oil as Fish.

Fish being highly alkalescent wants to be qualified by Salt and Vinegar.

14. Another Difference of the Flesh of Animals depends upon the Difference of their Food, from which it is not hard to determine their Qualities, consider'd as Aliment; and the Flesh of Animals of the same Species is more or less delicate and nourishing, according to their Food. Those Animals that live upon other Animals have their Flesh and Juices more alkalescent than those that live upon Vegetables.

15. The Difference of the Qualities of the Flesh of the same Species, depends upon the manner of living of the Animal.

Abstracting from other Considerations, the most healthy Animal affords the best Aliment, and the castrated, than those that are not so.

An Animal that feeds itself, takes the most proper Food in the properest Quantities (if it has Plenty enough) has better Air and more Exercise; all which contribute to make the Animal more healthy; for these Reasons *Hippocrates* commends the Flesh of the wild Sow above the tame; and no doubt, but the Animal is more or less healthy, according to the Air it lives in; the Flesh of the same Species differs very much, as the Animal lives in Marshes or Mountains. The wild Kinds of Animals having more Exercise, have their Juices more elaborated and exalted; but for the same Reason the
Fibres

Fibres are often harder, especially when old. For this Reason, perhaps, the Roe-buck is the finest of the Venison Kind. This Rule, in some measure, holds true with Fishes; Sea-Fish living in an Element more agitated, and River-Fish are better than those in Ponds.

Eels, for want of Exercise, are fat and slimy; for this Reason, perhaps, Fish without Fins and Scales were forbid the *Israelites*.

As the Fibres of fat Animals are often more tender and moist than those of lean, they are more coveted by Mankind; and tame Fowls offering themselves, as it were, to Mankind, seem to be their natural Food.

16. The Juices of the same Animal in Decoctions are often more nourishing, when the solid Parts are not so good, and the Broth made of grown Animals more nourishing than that of young; for of the Parts

of the same Animal, the muscular Flesh with the nervous Parts afford the best Nourishment, as containing the most spirituous Parts. The Difference of the muscular Flesh, taken in Substance, depends upon the Hardness, Tenderneſs, Moisture, or Drineſs of the Fibres. The ſeveral Parts of the ſame Animal differ like- wiſe in their Qualities; their Livers are tender, and by the Juice which they contain are eaſily corruptible; all the Parts, and eſpecially the Glands, partake of the Qualities and Juices which they prepare; the In- teſtines, and Parts about the Meſen- tery, are relaxing; the Bones and Horns contain a great deal of vola- tile Salt; the Feet, conſiſting of Tendons and Ligaments, contain a viſcous Nourishment proper where ſuch is indicated. The Blood of Animals contains Salts which makes it laxative; it is not eaſy of Di- geſtion. Stall fed Oxen, and cramm'd
Fowls

Fowls are often diseas'd in their Livers.

P R O P. II.

To give an Account of the Nature and most simple Analysis of animal Fluids and Solids.

The properest Subjects for such an Enquiry are, *First*, The Fluid, which begins to receive an animal Nature without having perfectly attain'd to it, and approaches nearest to the Nature of Chyle, *viz.* Milk. *Secondly*, That which having attain'd an animal Nature by Circulation, is noxious, if retain'd in the Animal, as Urine. *Thirdly*, An animal Fluid, no ways excrementitious, mild, elaborated, and nutritious, and from which every Part of a 'perfect Animal can be form'd, as the White of an Egg. *Fourthly*, The nutritious Juice of a healthy Human Body, which resembles the White of an Egg, in

most of its Qualities. *Fifthly*, The Bones.

1. None of the animal Fluids above mention'd, in a sound State, is either acid, or alkaline. *First*, If to any Quantity of warm new Milk you pour Oil of Tartar *per deliquium*, or any other Alkali, no Effervescence will follow, but the whole Body of the Liquor will remain at rest, though it appear somewhat thinner. To another Quantity of warm Milk pour Spirit of Nitre, or any strong Acid, and again no Motion nor Ebullition will appear, only the Milk presently after will become thicker than it was; mix together the two Parcels of Milk, upon which the Experiments were made, and a great Effervescence will immediately arise; from whence the Proposition is evident, that Milk is neither acid nor alkaline; but when there is an Acid and Alkali mix'd in it, they manifest themselves by their Conflict: Milk doth not discover it-
self

self to be acid or alkaline by Trials with the Syrup of Violets.

The same Experiments hold in two Parcels of the Urine of a healthy Person, before it has stood twelve Hours.

The same Experiments succeed on two Parcels of the White of an Egg, only it grows somewhat thicker upon mixing with an Acid. The Serum of the Blood stands the same Trials of Acids and Alkalis.

2. The Milks of several Animals differ but very little as to their sensible Qualities; Womens Milk is the sweetest; as to their nutritious Qualities, they seem to stand in the following Order: That of Women, Asses, Mares, Goats, Sheep, Cows. The Milk of Animals which make hard Dung, is most nourishing.

3. Milk, standing some time, naturally separates into an oily Liquor, call'd Cream; and a thinner, blue, and more ponderous Liquor, call'd Skimm'd Milk, neither of which Parts

is

is naturally acid or alkaline (but may turn so by standing for some time) nor in the least acrimonious; for being let fall into the Eye, they cause no Pain or Sensation of Sharpness. Milk is a kind of Emulsion, or white animal Liquor, resembling Chyle, prepared chiefly from Vegetables, and after it has been mix'd with the animal Juices of the Spittle, Bile, pancreatick Juice, &c. is easily separated from them again in the Breasts.

4. It differs from a vegetable Emulsion by coagulating into a curdy Mass with Acids, which Chyle and vegetable Emulsions will not: Acids mix'd with them, precipitate a tophaceous chalky Matter, but not a cheesy Substance; for, as was before observ'd, if you pour Spirit of Nitre into any Quantity of boiling new Milk, no Conflict or Effervescence will follow, but the Liquor divides itself into Curd and Whey, which Whey turns spontaneously acid, and the Curd will
turn

turn into Cheefe, as hard as a Stone; which shews that the most solid Parts of Animals may be made of Milk. The same Effect of turning Milk into a hard Curd, may happen in a Human Body that abounds with Acids.

5. Milk drawn from a sound Animal, fed on Vegetables, standing in a Heat equal to that of a Man in Health, will soon separate itself into a Cream, and a more serous and ponderous Liquor, which after twelve Days attains to the highest Degree of Acidity. But if the Milk be drawn from some Animals that feed only upon Flesh, that have fasted long, are feverish, or have undergone hard Labour, it will be more apt to turn rancid, and putrify, than turn acid, acquiring first a saline Taste, which is a Sign of Putrefaction, and then it will turn into an* Ichor. The Milk of Animals in hot Countries is more apt to putrify, than of those in cold.

* *A watery putrid Humour.*

6. If to a Quantity of boiling new Milk, you add by degrees any fix'd Alkali, as Salt of Tartar, or Oil of Tartar *per deliquium*, there will be a lighter *Coagulum* form'd than by an Acid. The Milk, by boiling, will change into a yellow Colour, and run through all the intermediate Degrees, till it stops in an intense Red. The same thing happens by the alkaline Powers of the Body; for when an Animal that gives Suck turns feverish, that is, its Juices more alkaline, the Milk turns from its native genuine Whiteness to Yellow; to which the Suckling has an Aversion: This was the Case (as the learned *Boerhaave* tells us) of the Cows of *Holland*.

7. If a Nurse should abstain from all acid Vegetables, from Wine, Malt-Drink, and feed only on Flesh, and drink Water, her Milk, instead of turning sour, will turn putrid and smell like Urine. An alkalescent Diet, except that of Water, is often the
Case

Case of Nurses in great Families; their Milk subjects the Child to Fevers. On the other hand, the Milk of poor People that feed upon an acescent vegetable Diet, subjects the Child to Diseases, that depend upon Acidity in the Bowels, as Cholick: The Symptoms of such a Constitution are a sour Smell in their Fæces, sour Belchings, Distensions of the Bowels, and Paleness of the Flesh. The Cure of both Diseases is effected by a Change of Diet in the Nurse, from Alkalescent to Acescent, or contrary ways, as the Case requires. The best Diet for Nurses is a Mixture of both.

It follows likewise from the foregoing Observations, that no Nurse should give Suck after twelve Hours fasting; and that a Tendency to Yellow is an early Sign of a Fever in the Nurse.

From the foremention'd Qualities of Milk, it appears to be a proper Diet for Human Bodies, where Acrimony
is

is to be subdued or avoided; but not so proper where the Canals are obstructed, it being void of all saline Quality. The Inconveniencies arising from its Curdling by the four Juices of the Stomach, may be overcome by time; all that it can do in Obstructions is by Dilution.

8. Recent Urine, as it is neither acid nor alkaline, distill'd, yields a limpid Water, neither acid nor alkaline, saline nor inflammable, and what remains at the bottom of the Retort is neither acid nor alkaline; but being exhal'd to the Consistence of a Syrup, passeth through all the degrees of Colours, Yellow, Red, Brown and Black; and this soapy Water being calcin'd, affords some Quantity of Sea-Salt, but only in the Case of the Animal's taking Sea-Salt with its Food.

9. Hence Sea-Salt passeth unalter'd through all the Strainers of a Human Body; the moderate Use of it is very proper to preserve Bodies; through

through which it passeth, from Corruption; it detergeth the Vessels, and keeps the Fluids from Putrefaction. The Ancients gave the *Sal Gemmæ* in putrid Fevers.

All Human Urine, distill'd, affords a Water of a foetid Odour, which that of Animals who feed on Vegetables, does not. The Urine of hard Drinkers and feverish Persons, affords a Liquor extremely foetid, but no inflammable Spirit; what is inflammable stays in the Blood, and affects the Brain. Great Drinkers commonly die Apoplectick.

10. The Urine is a Lixivium of the Salts that are in a Human Body, and the proper Mark of the State and Quantity of such Salts; and therefore very certain Indications for the Choice of Diet may be taken from the State of Urine. Though the Salts of Human Urine be neither acid nor alkaline, these Salts may by the violent Motion of the Blood be turn'd alkaline, and even

even corrosive; and when they begin to turn so, they affect the small and tender Fibres of the Brain more sensibly than other Parts.

I 1. Recent Urine, distill'd with a great Heat, and dry Sand, will afford a volatile alkaline Salt; and after the same manner, the Heat of a Human Body, as it grows more intense, makes the Urine smell still more strong, and of a deeper Colour. But as long as those alkaline Salts are carried off by Urine, the Brain and Nerves are less affected; but on the contrary, when in a Fever these Salts are left behind, that is, when the Urine turns pale, the Patient is in danger.

I 2. Recent Urine, distill'd with a fix'd Alkali, is turn'd into an alkaline Nature; whence it seems probable, that alkaline Salts taken into a Human Body, have the Power of turning its benign Salts into fiery and volatile; on which Account they seem
improper

improper in inflammatory Distempers, where the Salts are already too much attenuated. *Hippocrates*, who found out this by Experience, order'd in such a Case things of an acid Nature. In general, a high colour'd Urine indicates an acid cooling Diet; for it is certain an acid or alkalescent Diet makes a great Difference in the Salts of a Human Body.

I 3. The Rob or Sapa of Urine, distill'd with quick Lime, affords a fiery, but not an alkaline Spirit; and Lime-Water, given inwardly in the Case of a Diabetes, will bring the Urine from limpid Pale, to be of a higher Colour, which shews the Power of a Lixivium of quick Lime to unlock the Salts that are entangled in the viscid Juices of some scorbutic Persons.

I 4. Recent Urine will likewise crystallize by Inspissation, and afford a Salt neither acid nor alkaline, but

H

of

of an active Nature, which may be properly call'd the Essential Salt of a Human Body. Urine becomes alkaline by Digestion, in a Heat not greater than that of a Human Body, and throws off a stony Matter to the Sides of the Vessel.

15. The Urine long detain'd in the Bladder, as well as a Glass, will grow red, foetid, cadaverous and alkaline. The Case is the same with the stagnant Waters of Hydropical Persons, which at last produce a Drought and feverish Heat.

16. From hence very good Rules may be drawn for the Diet of Nephritick and Dropfical Persons, that it ought to be such as is opposite to and subdueth the alkalescent Nature of the Salts in the Serum of their Blood; those manifest themselves in the Urine, which, as was said before, is the Lixivium of the whole Body. Sal Ammoniac may likewise be obtained from Urine, which is
nearest

nearest to the Nature of an animal Salt.

17. The White of an Egg resembles the nutritious Juice of an animal Body; from the White of an Egg every part of a perfect Animal is formed; for during the Incubation of the Hen, there is nothing of the Egg consum'd but the White.

18. The White of an Egg is a viscous, unactive, insipid, inodorous Liquor, capable of mixing with Water; and so mild, that apply'd to the most sensible Part, the Eye, it causeth no Pain.

19. It is neither acid nor alkaline; for if the Juices of an animal Body were either, so as by the Mixture of the Opposites, to cause an Ebullition, they would burst the Vessels.

20. The White of an Egg gradually dissolves by Heat, exceeding a little the Heat of a Human Body; a greater degree of Heat will thicken

it into a white, dark-colour'd, dry, viscous Mass; and this is the Case of the Serum of the Blood, upon which different degrees of Heat produce contrary Effects.

Attention ought to be had to this Maxim, in the Management of Diet, Exercise, and all outward and inward Application to Human Bodies: Warm Cataplasms discuss, but scalding hot may confirm the Tumor. Heat, in general, doth not resolve and attenuate the Juices of a Human Body; for too great Heat will produce Concretions.

21. Spirit of Wine mix'd cold with the White of an Egg, coagulates it as much as boil'd Water, which shews that Spirit of Wine is an immediate Styptick, so that injected into the Veins, it is sudden Death; and taken by the Mouth in great Quantities, is sometimes sudden, but always certain Death. Spirituous Liquors are so far from attenuating, volatilizing,

volatilizing, and rend'ring perspirable the animal Fluids, that it rather condenseth them, and hard'neth the Solids, and therefore properly us'd to hinder the Growth of young Animals; and this it will do by mere external Friction, thereby coagulating the Juices in the Extremities of the Vessels, hardening and abolishing the Canals, and so increasing their Resistance against the Force of the influent Liquid, which would otherwise stretch them. This plainly demonstrates the bad Effects of inflammable Spirits on Human Bodies.

22. The Water gain'd from the White of an Egg, by a gentle Distillation, is neither acid nor alkaline; but by a strong Distillation it affords an alkaline Spirit, Salt, two kinds of Oil, and an Earth, which is another Instance of the Alterations great degrees of Heat cause in animal Subjects; and hence we may conclude, that volatile Salts never exist in

their own Form, in an animal Body; that the Heat requir'd to make them volatile, endangers the Life of the Animal; hence a highly alkalescent Diet, in hot Constitutions, must be hurtful and dangerous.

23. The White of an Egg will putrify and turn alkaline by Digestion; a single Grain of this putrify'd Substance has operated like a Poison, causing Vomiting, and a Looseness; the Antidote of this Poison is some acid Liquor, and such are indeed indicated when the Juices of a Human Body verge to Putrefaction. The White of an Egg during Incubation, is dissolv'd, but not, properly speaking, putrify'd; for in such a State it would be unfit for Nutrition.

24. It seems probable that the Bile in a Human Body, by stagnating, putrifies, causing a Cholera Morbus in the first Passages, and a Pestilential Distemper when it mixeth with
the

the Blood. In such a State of the Bile, the Aliment ought to be thin to dilute, demulcent to temper, or acid to subdue and destroy an alkaline Acrimony.

The nutritious Juice of a healthy Animal resembles the White of an Egg, in most of its Qualities; but this nutritious Juice being a subtile Liquor, scarce obtainable from a Human Body, the Serum of the Blood is fairly substituted in its Place.

25. The Serum of the Blood stands the foremention'd Trials, and discovers itself, to be neither acid nor alkaline, only Oil of Vitriol thickens, and the Oil of Tartar thins it a little.

26. The Serum of the Blood digested in a Heat not greater than that of a Human Body in Health, will gradually become thinner, begin to smell * cadaverous, and putrify;

* *Like a Carcase.*

and at last, like the White of an Egg, turn to an alkaline Ichor, that ferments with Acids, and committed to Distillation, affords like the White of an Egg, an alkaline Salt. This shews the Effect of gentle Heat in dissolving Coagulations; for even the viscous Matter which lies like Leather upon the extravasated Blood of Pleuritic People, may be dissolv'd by a due degree of Heat.

27. When the Blood stagnates in any part of the Body, it first coagulates, then resolves, and turns alkaline, putrid, and corrosive.

28. As the Serum of the Blood is resolvable by a small Heat, a greater Heat coagulates it so as to turn it horny like Parchment, but when it is thoroughly putrified, it will no longer concrete. The Blood of some Persons who have dy'd of the Plague, could not be made to concrete, by reason of the Putrefaction already begun.

29. The

29. The Serum of Blood coagulates like the White of an Egg, with cold Spirit of Wine.

30. The Serum of the Blood is more saline than the White of an Egg, perhaps by the Salts taken in Nourishment; and has something of a more foetid urinous Scent.

31. The Serum of the Blood affords by Distillation an exceeding limpid Water, neither acid nor alkaline, which shews that the most subtile part of the Blood approacheth nearer to Water than any other Liquor, and that the Blood naturally contains no volatile Salt.

32. These Experiments are to be made on the Blood of healthy Animals: It is possible in a lax and weak Habit of Body, where the Chyle is not thoroughly assimilated by Circulation, but floats on the Blood like Oil, that such a Serum might afford quite other Contents, and perhaps even an inflammable Spirit, by reason

son of the vegetable Nature of the Chyle.

33. The Serum of the Blood by a strong Distillation affords a Spirit, or volatile alkaline Salt, and two kinds of Oil, and an Earth, which still proves the Effect of Heat in Human Bodies, in changing the benign Salts into alkaline.

34. The Serum of the Blood is attenuated by Circulation, so as to pass into the minutest Channels of an animal Body, and become fit Nutriment for it, but by the continual Attrition and Heat of some of its Particles, becomes sharp and offensive to the Body: Nature has provided the Kidneys to discharge them. Hence appears (as by Prop. VIII. Chap. II.) the continual Necessity of a fresh Recruit of Chyle, which like an Emulsion dilutes the Serum, as likewise the Mischiefs arising from the Retention of Salts that ought to pass by Urine, and the proper Indications

tions for cooling and diluting in such an alkalescent State of the Fluids.

35. It appears by Experiments made upon Bones, and other Animal Solids, that they consist of the same Principles with the Fluids; a dry Bone distill'd affords a great Quantity of insipid Water; after the Bones have undergone the Violence of the Fire, the Ashes afford no fix'd Salt, only sometimes in Animals that take Sea-Salt, there will be a very small Proportion of that in the Ashes.

36. The animal Fluids and Solids are resolvable into the same Principles; and this is true not only of the Fluids and Solids themselves, but likewise of all Preparations of them. The Gellies made of the Decoction of lean Flesh and Bones in clear Water, are resolvable into the same Principles as the Flesh and Bones themselves; and if these Decoctions

coctions be repeated till the Water comes off clear, the Remainder yields no Salt by Distillation, and little Oil; therefore it is possible to extract the whole Virtues of animal Substances by Decoctions, but the gentlest extract the most volatile and finest Parts after the Oil or Fat is separated.

37. Preparations by Cookery of Fish or Flesh ought to be made with regard to rectifying their most noxious and slimy Substances, and to retain those that are most nutritious; such Preparations as retain the Oil or Fat, are most heavy to the Stomach, which makes bak'd Meat hard of Digestion. Boil'd Flesh is more moistening, and easier of Digestion than roasted.

38. By Experiments of the Mixture of different Substances with the Serum of the Blood, it appears that all volatile Alkalis thin it, and Acids coagulate it. I said, volatile Alkalis,
for

for the Serum being mix'd with an equal Quantity of Oil of Tartar *per deliquium*, will grow somewhat thicker, and an alkaline Vapour ariseth from the Mixture; but the same Proportion of Spirit of Sal Ammoniac makes the Serum thinner, without causing any Alteration in the Scent or Colour.

39. Spirit of Vitriol pour'd to pure unmix'd Serum, coagulates it as if it had been boil'd. Spirit of Sea-Salt makes a perfect Coagulation of the Serum likewise, but with some different Phenomena from the former. The Spirit of Nitre produceth the same Effect.

The Serum, which is mix'd with an Alkali, being pour'd to that which is mix'd with an Acid, raiseth an Effervescence; at the Cessation of which the Salts, of which the Acid was compos'd, will be regenerated.

40. Vinegar is an Acid of a very peculiar Nature, cooling, and yet
not

not coagulating; for Spirit of Vinegar gently dilutes the Serum of the Blood; and even the Oil of Tartar being pour'd to this Mixture causeth no Effervescence; tho' *Hornberg* says, that Spirit of Vinegar concentrated, and reduc'd to its greatest Strength will coagulate the Serum.

41. The Mixture of the Solutions of Sea-Salt, Sal Gemmæ, Borax, Nitre, and Sal Ammoniac, cause no change of Colour in the Serum; but dissolve its Texture a little, all except that of the Borax. *Glauber's* Salt maketh a strong Coagulation of the Serum, by reason of the Oil of Vitriol it contains.

42. All saponaceous Substances, which are a Mixture of Oil and alkaline Salt, thin the Blood, without causing any Effervescence: Spirit of Hartshorn given in great Quantities will produce Hæmorrhages, which I have known by Experience, and therefore

therefore is very improper in many Cases. *Boerhaave*, in his Chymistry, says, That *Sal volatile oleosum* will coagulate the Serum on account of the Alcahol or rectify'd Spirit which it contains.

43. The Tincture of Salt of Tartar, *viz.* a Preparation of the highest rectify'd Spirit of Wine, and the strongest fix'd Alkali, preserves the Serum in a neutral State; for the Spirit of Wine tends to coagulate, and the Alkali on the contrary to dissolve it, whence it becomes neither thicker nor thinner.

44. What we take in common Aliment is endued with the above-mention'd Qualities in some degree. Therefore from these Experiments very useful Indications for Diet may be taken, according to the different State of the Blood, as will appear by what follows.

C H A P. V.

Of the Effects of different alimentary Substances upon the Fluids and Solids of a Human Body.

P R O P. I.

Different sorts of Aliments are not subdu'd or assimilated by the vital Force of a Human Body so intirely, as to be divested of their original Qualities; but while they repair the Fluids and Solids, act variously upon them, according to their different Natures. Therefore,

1. The proper Way of treating the Subject of Aliment, is to consider the Actions of the several sorts of it upon the Fluids and Solids of Human Bodies, and to separate, at least in Idea, their Alimentary from their Medicinal Qualities.

P R O P.

P R O P. II.

The Diseases of Human Bodies often require Substances of more active Principles, than what are found in common Aliment, in order to produce sudden Alterations: But where such Alterations are not necessary, the same Effect may be obtained by the repeated Force of Diet, with more Safety to the Body, where the less sudden Changes are less dangerous. The smaller Activity of Aliment is compensated by its Quantity; for according to the Laws of Motion, if the Bulk and Activity of Aliment and Medicines are in reciprocal Proportion, the Effect will be the same.

I. All Bodies which by the animal Faculties can be changed into the Fluids and Solids of our Bodies, are call'd Aliment. But to take it in the largest Sense, by Aliment I understand

derstand every thing which a Human Creature takes in common Diet, as Meat, Drink; and Seasoning, as Salt, Spice, Vinegar, &c.

2. It has been explain'd (*Prop. VII. Chap. II.*) how the Aliment, in moving through the capillary Tubes at last, as it were stagnates and unites itself to the Vessel or Tube through which it flows: But in this Motion it will act differently, both upon the Fluid and Solid, according to its different Nature. Every thing that acts upon the Fluids, must at the same time act upon the Solids, and contrariwise; yet one may separate these two Actions in Idea.

P R O P. III.

To enumerate the different Actions upon the Fluids and Solids of a Human Body.

There is a multitude of Words to express the various Alterations which
are

are produc'd in a Human Body by Diet and Medicines, but as far as relates to our present Subject, they may be reduc'd to the following general Heads.

1. The Actions upon the Solids are, *First*, Stimulating or increasing their Vibrations or oscillatory Motions. *Secondly*, Contracting, that is, diminishing their Length, and increasing their Thickness. *Thirdly*, Relaxing, or making them more flexible in their less coherent Parts. And *Lastly*, Constricting, or contracting, or narrowing the Cavity of the capillary Tubes.

2. The Actions upon the Fluids are either changing their Qualities or their Quantity.

3. Their Qualities are chang'd by, *First*, Attenuating and condensing, that is, diminishing or increasing the Bulk of their Particles. *Secondly*, By rendering them acrimonious or mild. *Thirdly*, By coagulating and diluting, that is, making their Parts more or

less coherent. *Fourthly*, By increasing or diminishing their Motion through the Vessels.

4. The Quantity of the Fluids is increas'd or diminish'd by the Increase or Diminution of the Quantity of Aliment; or by the suppressing or promoting animal Secretions.

5. That all these Actions can be perform'd by Aliment as well as Medicines, is plain from Reason, Experience, and in some Cases by ocular Demonstration, by observing the Effects of different Substances upon the Fluids and Solids of a Human Body, when the Vessels are open and gape by a Wound or Sore. The Effects of tepid Water and farinaceous Substances in relaxing; of Spirits, in stopping Hæmorrhages, and consolidating the Fibres; the Power of alkaline Absorbents in subduing Acrimony, and of Oil in stopping Perspiration, is well known to Chirurgeons, who are likewise well acquainted

quainted with the Influence of Diet upon the Wounds and Sores of their Patients, and from the Condition of the one, can guess at the Errors or Regularity of the other. Acrid Substances will break the Vessels, and produce an Ichor instead of laudable Pus. The chief Intention of Chirurgery, as well as Medicine, is keeping a just *Æquilibrium* between the influent Fluids and vascular Solids; when the Vessels are too lax, and don't sufficiently resist the Influx of the Liquid, it begets a *Fungus* or proud Flesh; when the Balance is on the other side, it produceth a Cicatrice. Were it not criminal to try Experiments upon Patients, which they too often try upon themselves, I could answer that the Doctrine of this Chapter would be verify'd by Experience in Wounds and Sores, as it is often perceptible even in an Issue.

P R O P. IV.

To explain the Effects of different alimentary Substances upon the Fluids and Solids of a Human Body.

1. The first sort of Alimentary Substances are such as are of so mild a Nature, that they act with small Force upon the Solids, and as the Action and Re-action are equal, the smallest degree of Force in the Solids digests and assimilates them; of such sort is Milk, and Broths made of the muscular Parts of Animals, which are as it were already prepar'd, and easily converted into animal Substances; these are proper Nourishment for weak Bodies, and agree perfectly well with them, unless there be some particular Acrimony in the Stomach, which sometimes makes them offensive, and which Custom at last will overcome.

2. Those

2. Those things which stimulate the Solids, produce the greatest Alterations in an animal Body. This is seen in many Instances. Violent Sneezing produceth Convulsions in all the Muscles of Respiration, and an universal Secretion of all the Humours, Tears, Spittle, Sweat, Urine, &c. So great an Alteration can be produc'd only by the Tickling of a Feather, and if the Action of Sneezing should be continu'd by some very acrid Substance, it will at last produce Head-ach, Vomiting, universal Convulsions, Fever and Death. Therefore such active Substances as taken inwardly in small Quantities make great Alterations in the Fluids, must produce this Effect by their stimulating Quality.

3. Acrid Substances, which are small enough to pass into the capillary Tubes, must stimulate the small Fibres, and irritate them into greater Contraction, and stronger Vibrations.

4. Many things which we take as Aliment, or with our Aliment, have this Quality in some degree: As the Juices of acid Vegetables, fermented Liquors especially sharp Wines, fermented Spirits; aromatical Vegetables, as Fennel, Savory, Thyme, Garlick, Onions, Leeks, Mustard, which abound with a volatile pungent Salt; all Spices in general, all Vegetables, which being corrupted, easily resolve themselves into a foetid oily alkaline Substance. Onions, Garlick, Pepper, Salt, and Vinegar taken in great Quantities by their *Stimulus*, excite a momentary Heat and Fever, and therefore in some Cases to be mention'd afterwards are very proper.

5. The solid Parts may be contracted various ways. *First*, By dissolving their Continuity, for when a Fibre is cut through, it contracts itself at both ends; therefore all things which are so sharp as to destroy the small Fibres, must contract them.

them. *Secondly*, Whatever empties the Vessels, gives room to the Fibres to contract; therefore Abstinence produceth this Effect in the best manner. Whatever shortens the Fibres, by insinuating itself into their Parts, as Water in a Rope, contracts; fermented Spirits possess this Quality in a great degree.

6. The more oily any Spirit is, the more pernicious, because it is harder to be * eluted by the Blood. Brandy is more easy to be so, than Spirit of Juniper; and that, than Spirit of Annis-seed. Compound aromatical Spirits destroy, *First*, By their fermentative Heat. *Secondly*, By their oily Tenacity. *Thirdly*, By a caustick Quality residing in Spices apt to destroy the solid Parts; but these Qualities render them proper in some Cases, taken in small Quantities.

* Washed away.

7. Fermented Spirits contract, harden and consolidate many Fibres together, abolishing many Canals, especially where the Fibres are the tenderest, as in the Brain, by which Quality they destroy the Memory and intellectual Faculties.

8. Acid austere Vegetables have this Faculty of contracting and strengthening the Fibres, without some of the bad Effects of fermented Spirits, as all kinds of Sorrel (the Virtues of which lie in an acid astringent Salt, a sovereign Antidote against the putrescent bilious Alkali) several kinds of Fruits, as Quinces, some sorts of Pears with the Marmalades made of them, Medlars, Capers, Barberries, Pomegranates, Purslain; such are easily distinguish'd by a rough styptick Taste. Amongst Drinks, austere Wines; unripe Fruits likewise have the same Quality, but are apt to occasion foul Eruptions on the Skin, to obstruct the Nerves, and occasion Palsies.

9. Re-

9. Relaxing the Fibres is making them flexible, or easy to be lengthen'd without Rupture, which is done only in the capillary vascular Solids. Amongst Liquids endued with this Quality of relaxing, warm Water stands first; next watery Decoctions of *farinaceous Vegetables, or Grains, as Oats, Barley, &c. All sweet and mild Garden-fruits, almost all Pot-Herbs, Spinage, Beets, Cabbage, Coleworts, and all that Tribe. Red Cabbage, besides, is reckon'd a good Pectoral; some of the Plants which yield a milky Juice, as Lettuce, Cichory, whose Milk is anodyne and resolvent, therefore good in Diseases of the Liver; but all such Vegetables must be unfermented, for Fermentation changes their Nature. Oils express'd from mild Plants, Animal Oils, Cream, Butter, Marrow, which last is of all oily Substances the most penetrating.

* *Mealy.*

10. It is not probable that any thing which Human Creatures take as Aliment, should have the Quality of entirely constipating or shutting up the capillary Vessels, because such Substances could hardly enter the Lacteals, and if they did, would stop the Circulation in the Lungs; but all viscid Aliment, such as is made of farinaceous Substances unfermented, neither pass the Lacteals, nor circulate so easily as the same Substances fermented. Some of the *Fungus* kind gather'd by mistake for edible Mushrooms, have produced a Difficulty of Breathing: But the capillary Tubes are most commonly totally obstructed, either by outward Compression, or Congelation of the Fluid.

11. The Qualities of the Fluids can be likewise chang'd by Diet; as *First*, By *attenuating or diminishing the Cohesion of the Parts of the Fluid. The Cohesion of the Parts

* *Making thin.*

depends

depends upon the Weight and Quantity, therefore Abstinence and a slender Diet attenuates, because * Depletion of the Vessels gives room to the Fluid to expand itself.

12. Whatever penetrates and dilutes at the same time; therefore Water impregnated with some penetrating Salt, attenuates most strongly; Water with *Sal Ammoniac* will pass through a Human Skin. To this Quality may be justly ascrib'd the great Effects of medicated Waters; all stimulating Substances, by increasing the Motion of the Blood, attenuate, unless they increase the Motion so much, as at last to produce Coagulation.

13. Thickening the Blood is most easily brought about by exhaling the most liquid Parts by sudorifick or watery Evaporations; but this brings it into a morbid State. Acid austere Vegetables before-mention'd, have

* *Emptying.*

this Quality of condensing the Fluids, as well as strengthening the Solids.

14. The Blood of labouring People is more dense and heavy than of those who live a sedentary Life, and the Diseases which People imagine proceed from the Thickness of Blood, come often from the contrary Cause; too thin Blood strays into the immediately subordinate Vessels, which are destin'd to carry Humours secreted from the Blood, according to what was said, *Prop. V. Chap. II.* This causes an Obstruction falsely ascrib'd to the Thickness of the Blood.

The Qualities of Blood in a healthy State are to be florid when let out of the Vessel, the red Part congealing strongly and soon together in a Mass moderately tough, swimming in the Serum, which ought to be without any very yellow or greenish Cast. The Gravity of Blood to Sea-Water is as 26 is to 25, that of the
Serum

Serum to the same Water, as 300 to 353; it's an easy Matter to examine extravasated Blood by these Marks.

15. Acrimony* is not natural, but induc'd into the Fluids of an animal Body. Acrimony may be introduc'd by Diet that is either Muria-tick, (Briny) or Acid, which likewise is of two sorts, of things naturally acid, or (made so by Fermentation) Substances aromatick, consisting of Salts, and highly exalted Oils, intimately united. Or *Secondly*, by increasing the Velocity of the Blood, and consequently the Attrition of the Parts.

16. Acrimony in the Blood itself is commonly of three sorts according to the Nature of the Salts in which it resides; † Acid, Alkaline, or Muriatick, as in the Sea-Scurvy, but the last approaches more towards the Alkaline, and admits of the same

* *Sharpness.*

† *See Explanation of the Chymical Terms.*

Cure :

Cure: Acid Acrimony resides chiefly in the first Passages, proceeding often from the Weakness of Digestion, and the too long Duration of Vegetables, and Milk in the Stomach. Animal Substances are all alkalescent, of vegetable Substances some are acid, others alkalescent; and each sort is to be used according to the two different Intentions.

17. Antiacid Vegetables are, *First*, All kinds of Garlick, Onions, Leeks, and Celery; the Antiscorbutick Plants, Carrots, Turnips, Eringo Roots, Asparagus, Horse-radish, Mustard, Cabbage. *Secondly*, All animal Substances, especially of such as live on other Animals, the Juices of which are more alkalescent than of the Animals which live upon Vegetables; such are most Fishes, especially some of the Testaceous kind. *Thirdly*, Water, as it dilutes and subdues Acidity. *Fourthly*, Oils are Antiacids so far as they blunt Acrimony; but as some-

sometimes they are hard of Digestion they produce Acrimony of another sort.

18. On the other hand, when the Acrimony is alkaline, which is more frequently the Case in the circulating Juices, the proper Diet is Decoctions of farinaceous Vegetables, which seem appointed by Nature for the vegetable Diet of Human Creatures. This alkaline Acrimony indicates the copious use of Vinegar, and acid Fruits, as Oranges, which contain a Juice most effectual in the Cure of the Muriatick Scurvy of Mariners; the Juice of Lemons is likewise proper and more cooling and astringent than that of Oranges. In this Case all the mild Antiscorbuticks are indicated, as Sorrel, Cichory, Lettuce, Apples; and of Liquids, Whey: On the contrary, all the acrid Antiscorbuticks, as Scurvygrass, Horse-radishes, Mustard, &c. are hurtful in this hot Scurvy.

19. There is a third sort of Antiscorbuticks proper in this alkalifcent State of the Fluids, which are call'd Astringent, such as Pomegranates, Capers, and most of the common Pickles prepar'd with Vinegar. The Extremity of Alkali is Putrefaction. All acid Substances, and Sea-Salt resist Putrefaction; but as it is a sharp solid Body unalterable in an animal Body, when it is taken in too great Quantities in a constant Diet of Salt Meat, it breaks the Vessels, produceth Erosions of the solid Parts, and all the Symptoms of the Sea-Scurvy, which is to be cured by acid Vegetables, and not by hot Antiscorbuticks; all Spices likewise induce this Acrimony, as was hinted before.

20. There are other Substances which are opposite to both sorts of Acrimony, which are call'd demulcent or mild, because they blunt or sheath these sharp Salts, as farinaceous
Legumes,

Legumes, such as Pease, Beans, Lentils. Native Oils of Animals, as Cream, Butter, Marrow, which last is a Specifick in that Scurvy which occasions a crackling of the Bones, in which Case Marrow performs its natural Function of moistening them. All Plants which are without Smell or pungent Taste, are demulcent; as likewise all the Alimentary Parts of sound Animals, for none of their Juices will hurt the Eye, or a fresh Wound. Acrimony which is not * viscid, may be cur'd by Diet; but Viscidity requires more active Substances to dissolve it.

21. Whatever renders the Motion of the Blood more languid than natural, disposeth to an acid Acrimony: What accelerates the Motion of the Blood beyond what is natural disposeth to an alkaline Acrimony.

22. The next Alteration which is made in the Fluids, is rendering them

* Tough, Gluey.

more thin, which is perform'd by Diluting; there is no real Diluent but Water, every Fluid is diluent as it contains Water in it. Water dilutes, but at the same time relaxeth, this last Quality is taken off by mixing some acid Juice with it: Water mix'd with Acids resists the Heat and alkalescent State of the Fluids; as long as there is Thirst, a quick Pulse, Driness, with a free Passage by Urine, and Stricture of the Vessels, so long is Water safely taken.

23. Opposite to Dilution is Coagulation or Thickening, which is perform'd by dissipating the most liquid Parts by Heat, or by insinuating some Substances which make the Parts of the Fluid cohere more strongly. All Vegetables, which make a black Tincture with the Vitriol of Steel, have this Quality; they have commonly a rough styptick Taste: Vinegar, as was said before, is an Acid very particular, for it doth not coagulate:

coagulate: Inflammable Spirits coagulate the Fluids, and harden the Solids in a strong Degree.

24. Resolving what is congeal'd, is turning it into a Fluid again; this can be perform'd by watery Liquors, impregnated with some penetrating Salt, but more effectually by saponaceous Substances compos'd of Oil and Salt, such are Honey, and the Robs and Gellies of most Fruits. Vinegar and Honey mix'd is a strong Resolvent. Spissitude is subdu'd by acrid things, and Acrimony by inspissitating.

25. The second Manner of Operating upon the Fluids is by increasing or diminishing their Quantity: the first is perform'd by a plentiful Diet, and the Suppression of Evacuations; the Second, either by a spare Diet, or promoting the animal Secretions, that is, expelling the Fluids out of the Body. Tho' Secretions of the lauda-

ble Juices are best accomplish'd by increasing the Fluids.

26. Whatever generates a Quantity of good Chyle, must likewise generate Milk, such is new Milk season'd with Sugar or Salt. This will increase the Milk when it is diminish'd by the too great use of Flesh-Meat: Gruels made of Grains, Broths, Malt-Drink not much hopp'd, Posset-Drinks, and in general whatever relaxeth, have the same Effect.

27. There are as many good Pectorals of the Alimentary, as of the Medicinal Kind, as all Preparations of Barley, Oats, Honey; all saponaceous Substances before-mention'd, which attenuate Phlegm.

28. There is Aliment lenitive, expelling the Fæces without stimulating the Bowels; such are animal Oils quite fresh (for by standing they grow acrid) as Cream, Butter, Marrow,
Broths

Broths made of the Parts of Animals about the Mesentery, Oils express'd from ripe Fruits (from unripe they are austere and astringent) the Juices of mild and ripe Fruits, Decoctions of farinaceous Vegetables, natural Sopes, as Honey, Sugar, such Diet is proper for the hot Constitutions of warm Countries, where strong Perspiration exhales the Moisture, Water, Milk, Whey, taken in the open Air without much Exercise, so as to make them perspire, relax the Belly.

29. There are Aliments which besides this lubricating Quality, stimulate in a small degree. Gellies made of the solid Parts of Animals, as of their Horns, stimulate by the Salts that are in them. Salted Flesh, which often throws Ships-Crews into Fluxes; Shell-Fishes, which have a saline Taste; Garden Fruits which have any Acrimony; most sorts of Berries, some of which will produce

Diarrhœas; warm Water mix'd with Honey, and Honey mix'd with Acids dissolve Phlegm in the Bowels. There are others which promote the Secretion of Bile, such as all natural Sopes, the Juices of Fruits sharp and sweet, especially Grapes; the immoderate use of which will produce a Cholera Morbus.

30. Diureticks are Decoctions, Emulsions, and Oils of emollient Vegetables, in so far as they relax the Urinary Passages: Such as relax ought to be try'd before such as force and stimulate. Those Emollients ought to be taken in open Air to hinder them from perspiring, and on empty Stomachs. Vegetables which abound with essential Salts, are Diuretick by stimulating, as Sorrel, Chervil, Parsly, Eringo, &c. and likewise all such as contain an aromatical Balsam, as Asparagus, Fennel, &c.

31. As to Sudorificks, it ought to be consider'd that the Liquid which goes off by Sweat, is often the most subtile part of the Blood, and ought not to be forc'd away without manifest Necessity. The Matter of insensible Perspiration is mild; that of Sweat resembles Urine, and yields a volatile Salt, oily and fœtid. When Sweat is vehement it will grow bloody. The Matter of Sweat is the watery part of our Drink impregnated with this Salt, sometimes in weak and consumptive People, Crude Chyle; and sometimes (as was said before) the most elaborate subtile part of our Blood, as in fat People, who have a small insensible Perspiration.

32. Sweat is produc'd by changing the Balance between the Fluids and Solids (in which it must be confest that true Health consists) so as the projectile Motion of the Fluids overcome the Resistance of the Solids; therefore it is produc'd by relaxing
the

the Passages of the Skin. *Secondly*, By diluting. *Thirdly*, By dissolving the Blood. *Fourthly*, By accelerating its Motion. Water dilutes and relaxes at the same time, therefore is the best and safest Sudorifick; watery and acid things mix'd prove strong Sudorificks; Spices by heating and dissolving the Blood are not so proper and safe Sudorificks.

33. Insensible Perspiration is the last and most perfect Action of animal Digestion; the keeping it up in due measure, is the Cause as well as Sign of Health, and the least Deviation from that due Quantity, the certain Forerunner of a Disease; therefore the best Indications for Diet are taken from the Measure of Perspiration.

The Food, which is most vapourish and perspirable, is certainly the most easily digested, but such may be proper or improper for the Animal, according to its Circumstances, especially

especially the Quantity of its Muscular Motion. By *Prop. IV. Chap. II.* The Strength of the Aliment must be proportion'd to the Action of the Solids upon it, which, in an Animal under a course of Exercise or hard Labour is much stronger; therefore Aliment too vapourous or perspirable, will subject it to the Inconveniencies of too strong a Perspiration, which are Debility, Faintings, and sometimes sudden Death. What diminisheth Sweating, or the sensible Perspiration, increaseth the insensible, for that Reason a strengthening and astringent Diet often conduceth to this Purpose. According to the Experiments of *Sanctorius*, the most nourishing Aliment is the least perspirable, except Mutton, which of all others is most so, and Hogs-Flesh the least; and for the same Reason Eels, and all very fat and oily Substances: Copious Food of small Nourishment perspires much.

A Stomach too void or too full, stops Perspiration. The Fruits of the low pomiferous Plants, as Cucumbers, Melons, &c. stop Perspiration, therefore they are wisely provided by Nature in a Season when the Perspiration is too great. Variety of Meats diminish Perspiration, Honey in cold Constitutions increaseth Perspiration, except when it promotes too great a Secretion of the Bile, and then it diminisheth it: Drinking excessively during the time of Chylification, stops Perspiration. Let those who sit long at their Bottle after Meals, consider this.

The most sure Sign of a deficient Perspiration is Flatulency, or Wind.

34. The Menfes are promoted. *First*, By every thing which occasions a Plethora, such are all Aliments of easy Digestion, taken in sufficient Quantity. *Secondly*, By all saponaceous Substances, which * incide the

* Cut, Dissolve.

Mucus in the first Passages. *Thirdly,* By Spices and warm Vegetables, which abound with a volatile oily Salt. Of these we have spoken before.

35. Heat in animal Bodies is produc'd by the Attrition of the Fluids and Solids, for when that ceaseth, as in Death, there is Extremity of Cold. The solid Parts of Animals rubbing against one another, would in time produce a Heat capable to destroy the Parts, had not Nature provided an oily Substance to lubricate and moisten them; when that fails, as happens sometimes in the Scurvy, Gout, and Rheumatism, an Inflammatory Heat is often produc'd.

36. Stimulating Substances taken in Diet, increase Heat, because they increase the oscillatory Motion of the Solids, but most of all inflammatory Spirits. Whatever increaseth the Density of the Blood, even without increasing its Celerity, heats, because
a denser

a denser Body is hotter than a rarer. Extreme Cold at last heats. Cold in animal Bodies is produc'd by Causes contrary to those productive of Heat; as *First*, by diminishing the Force of any Stimulus, as by Whey, Milk, Water, &c. *Secondly*, By all things which relax. *Thirdly*, Alkaline Substances in respect of Acid, and Acid in respect of Alkaline are cooling.

37. Cephalick are all such things as attenuate the Blood so as to make it circulate easily through the capillary Vessels of the Brain. A Cordial, properly speaking, is not always what increaseth the Force of the Heart; for by increasing that, the Animal may be weaken'd, as in inflammatory Diseases. Whatever increaseth the Natural or Animal Strength, the Force of moving the Fluids and the Muscles, is a Cordial; these are such Substances as bring the Serum of the Blood into the properest

properest Condition for Circulation and Nutrition, as Broths made of animal Substances, Milk, ripe Fruits, and whatever is endued with a wholesome, but not pungent Taste. Whatever relaxes the too strict, or strengthens the too lax Fibres; what in some Cases dispels Wind; what excites and takes off the sluggish Motion of the animal Spirits, as Spices, Wine, and spirituous Liquors.

38. Carminative are such things as dilute and relax at the same time, because Wind occasions a Spasm or Convulsion in some Part; whatever promotes insensible Perspiration is carminative, for Wind is perspirable Matter retain'd in the Body.

39. All emollient relaxing Diet, and all things which destroy Acrimony, abate Pain.

40. There are several things taken in Diet which kill Worms, as Oil, and Honey.

Who-

Whoever attends to the Particulars barely hinted at in this Chapter, will easily perceive that all the Intentions pursued by Medicines, may be obtain'd and inforc'd by Diet.

It may be expected that I should say something in this Chapter of the Qualities of three exotick Plants, whose Infusions and Decoctions are now much us'd in common Aliment, Tea, Coffee, and Chocolate: There are many Treatises wrote about them, which ascribe to them both good and bad Qualities, which they have not. There is lately published a very learned and elaborate Dissertation upon Tea, by Dr. *Thomas Short*, in which the Author with great Knowledge, Industry, and Skill, has not only given us the natural History of the Plant, but likewise its Analysis.

But as the Infusions and Decoctions of the foremention'd Vegetables in common Water, are the only Preparations

parations of them in Use, there is no Necessity in this Place of considering any of their Contents, but such as are extracted by those simple Operations of Cookery.

The green Leaves of Tea contain a narcotick Juice, which exudes by Roasting. This is perform'd with great Care before it is expos'd to sale. The several Methods of discovering the Adulterations of Tea by Coppe-ras, Galls, Spirit of Hartshorn, one may see in the foremention'd Treatise. Tea, by its manner of affecting the Organs of Taste and Smell, contains very little of a volatile Spirit; its Rosin or fix'd Oil, which is bitter and astringent, cannot be extracted by Water, but demands rectify'd Spirit. The active Principles of it extracted by Infusion, are the most separable Parts of its Oil or Gum, and its Salt.

Its Salt and Gum are astringent; chalybeat Water draws from it a

L

Tincture

Tincture of the same Colour as that from Oak-leaves. It is acescent, as appears by its Effects upon Stomachs troubled with Acidity: So that Tea is an Infusion of a Plant acescent, and moderately astringent in warm Water.

As a watery Liquor, it is diluting; and stimulating by its Salt: By its astringent Quality it moderates the relaxing Quality of warm Water. By what has been said before in this Chapter, Water endu'd with any saline stimulating Substance is very penetrating, and goes into the most inward Recesses of the circulating Juices by its Quality, and refresheth the Brain and animal Spirits; but by its styptick and stimulating Quality it affects the Nerves, very often occasioning Tremors; by its Heat it promotes Perspiration; by its watery Quality it dissolves what is viscid in the Stomach, and so may help Digestion; but a strong
De-

Decoction of it is emetick, and drinking too great Quantities may relax and weaken the Tone of the Stomach.

As stimulating and diluting, it is diuretick; but as it is astringent, it is not quite so proper where relaxing the Urinary Passages is necessary.

Milk abates some of the foremention'd Qualities, making it more soft and nutritious, and Sugar, as a Salt, increaseth its *Stimulus*. From those Hints it follows, *First*, That Tea is proper only for such whose Bodies are in such a State as demands some of the foremention'd Alterations. Who these are, will be shewn more plainly in the following Chapter. *Secondly*, That the immoderate Strength and Quantity of this Liquor may be hurtful in many Cases, and to most People.

Coffee has in common with all Nuts an Oil strongly combin'd and entangled with earthy Particles.

The most noxious Part of its Oil exhales in roasting to the Abatement of near $\frac{1}{4}$ of its Weight.

* One Pound of Coffee, by Distillations, afforded of volatile Spirit, six Ounces, six Drachms; of Oil, two Ounces, two Drachms, two Scruples; of *Caput mortuum*, five Ounces, three Drachms. Tho' the Chymist did not, or could not calcine the *Caput mortuum*, so as to obtain its fix'd Salt, to be sure it must have some.

What is extracted by Water from Coffee, is the most separable Parts of Oil, which often swims a-top of the Decoction. This Oil is volatile, and consequently very little nutritious.

Volatile Oils refresh the animal Spirits, but likewise are endued with all the bad Qualities of such Substances, producing all the Effects of

* *Vide* Philosophical Transactions.

an oily and aromatical Acrimony mention'd in the following Chapter, as Driness, Heat, Stimulation, Tremors of the Nerves; from whence it has been accus'd of causing Palsies, Leanness, Watchfulness, and destroying masculine Vigour.

From these Qualities it is easy to imagine, that it must be hurtful to hot, dry, bilious Constitutions, and perhaps beneficial to Phlegmatick; and when drank in too great a Degree of Strength or Quantity, hurtful to every body.

Chocolate is certainly much the best of those three exotick Liquors; its Oil seems to be both rich, alimentary, and anodyne; for an Oil as soft as that of Sweet Almonds can be extracted from the Nut, and the *Indians* make Bread of it. This Oil, combin'd with its own Salt and Sugar, makes it saponaceous and cleansing, by which Quality it often helps Digestion and excites Appetite; when

it is mix'd with Vanillios, or Spices, it acquires likewise the good and bad Qualities of aromattick Oils, which are proper in some Cases and Constitutions, and very improper in others.

C H A P. VI.

Of the different Intentions to be pursued in the Choice of Aliment in different Constitutions.

WHolesome and unwholesome are relative, not real Qualities; therefore to affirm that such a Thing is wholesome or unwholesome, without describing the Subject in all its Circumstances to which it bears these Relations, is, with Submission, talking Nonsense.

To make these Terms of wholesome and unwholesome Aliment intelligible, there are two things necessary,

cessary, *First*, To shew what Aliment is proper for what Intention. *Secondly*, What Intention is proper to be pursued in such a Constitution of a Human Body. The *First* is the Subject of the foregoing Chapter, and the *Second* of this.

P R O P. I.

To enumerate the most common Diversities of the Constitutions of Human Bodies.

The most common Diversities of Human Constitutions arise either from the solid Parts as to their different Degrees of Strength and Tension; in some being too * lax and weak, in others too † elastick and strong; or from the different State of the Fluids, which, as they consist of Spirit, Water, Salts, Oil, and terrestrial Parts, differ according to the Redundance of the whole, or of any of these Ingredients, and there-

* Slack, of a loose Texture.

† Springy.

fore are plethorick, phlegmatick, oily or fat, saline, earthy, or dry, by the Dissipation of the most fluid Parts, which last Constitution is call'd by the Ancients, Atrabilarian, or Melancholick. A plethorick Constitution in which true Blood abounds, is call'd Sanguineous. A saline Constitution is either acid, alkaline, or muriatick, according to the Difference of the Salts which occasion it.

2. In some of these Senses, tho' every Human Constitution is morbid, yet are their Diseases consistent with the common Functions of Life, and leave them under their own Conduct, as to their manner of living, and therefore are a proper Subject for this Discourse, in which I am far from pretending to instruct the Brethren of the Profession, or anticipating their Directions to such as are under their Government.

3. I think it proper to advertise the Reader of two things. *First,*
That

That I endeavour to give the most simple Idea of the Distemper, and the proper Diet, abstracting from the Complications of the First, or the Contra-Indications to the Second. *Secondly*, That in a Discourse of this Nature, the Reasonings must be precise, tho' the Practice may admit of great Latitude.

P R O P. II.

To explain the Causes, Symptoms, and proper Diet of weak and lax Fibres.

1. In all the Fibres of an animal Body, and in the Sides of all the Canals, there is a contractile Power whereby the Fibres endeavour to shorten themselves. This is evident; for if a Fibre be cut transversely, both the Ends shrink, and make the Wound gape; the Force oppos'd to this contractile Power of the Fibres, is the influent Liquid. Health consists

sists in the * *Æquilibrium* between those two Powers, when the Fluids move so equally, that they don't press upon the Solids with a greater Force than they can bear, and no more in one Part than in another; and on the other hand, when the Solids resist and act upon the Fluids so equally, that there is no uneasy Sensation, the Animal is in Health; on the contrary, whenever this *Æquilibrium* between the influent Fluids and Solids is taken away, the Animal is in a morbid State; and whatever destroys it in any Point, destroys it in some measure through the whole Body.

2. The first and most simple Solids of our Body are perhaps merely terrestrial, incapable of any Change or Disease; of these Elements are constituted the smallest Fibres, of those Fibres the Vessels, of those Vessels the *Viscera* or Organs of the Body; therefore the Weakness and Laxity of

* *Equal Balance.*

the Fibres, Vessels, Viscera, and all Parts of the Body, may be considered as one Disease; tho' it must be own'd that the Disease is not always universal, and there will be sometimes a Weakness in some Organ with a great degree of Muscular Strength.

3. A Fibre is said to be weak when the Cohesion of its Parts is so small that it may be broken, or resolved by a Force not much greater than what happens commonly in the Body of a healthy Person: Debility of the Vessels or Organs is so small a Cohesion of the constituent Parts as makes them unable to discharge the common Functions of Life, consider'd in a State of Health. Tho' there is a Debility of Fibres in Infants, absolutely speaking, yet it is no Disease, because their Fibres being lax, lengthen by the Influx of the Liquids, which is the Cause of their Growth; but in adult Persons, when the Fibres cannot any more yield,

yield, they must either break or lose their Spring.

4. Laxity of a Fibre is such a small Cohesion of its Parts, as suffers it to be lengthen'd by a small Force: Laxity is a Species of Debility.

5. The most common Causes of Debility of Fibres are, *First*, A Defect or great Loss of the vital nutritious Juices: If there is not Blood enough, the Chyle cannot be easily assimilated. A Person who loseth daily great Quantities of Blood, turns Dropsical and Leucophlegmatick. An elastick Fibre, like a Bow, the more extended, it restores itself with the greater Force; if the Spring be destroy'd, it is like a Bag only passive as to the Influx* of the Liquid. *Secondly*, Nourishment too viscid and glutinous to be subdu'd by the vital Force; of this Sort *Hippocrates* reckoned unfermented Bread. *Thirdly*, A sedentary Life, for Motion increaseth the Circulation

* *Flowing in.*

of the Juices, and consequently the Application of the solid Parts to one another. *Fourthly*, Too great an Extension of the Fibres by Plenitude; a Lute-string will bear a hundred Weight without Rupture, but at the same time cannot exert its Elasticity; take away fifty, and immediately it raiseth the Weight. *Fifthly*, A moist Atmosphere. The Atmosphere is what keeps the Fibres of an animal Body together, we feel our Fibres grow strict or lax, according to the State of the Air; many who live healthy in a dry Air, fall into all the Diseases that depend upon Relaxation in a moist one. *Lastly*, A natural Weakness from the Frame and Constitution of the Body.

6. The common Signs and Effects of weak Fibres are Paleness, Smoothness, Coldness of the Skin, Colour of the Blood not Florid (for what maketh that is a strong Action of the Solids) a weak Pulse, Tume-factions in the whole Body or Parts,
Stagna-

Stagnation of Humours, and its Consequence, Putrefactions; for when the Force of the Vessels and Pressure of the Air is taken off, all the Humours expand themselves, and what stagnates must putrify; if a Person of a firm Constitution begins to bloat, and from being warm, grows cold, his Fibres grow weak. Anxiety and Palpitations of the Heart are a sign of weak Fibres: Acid Eructations upon taking vegetable Food, or Nidorose upon taking Animal, is a Sign of Weak Organs of Digestion. Depravation of the Humours from a sound State, to what the Physicians call by the general Name of a * Cacochymy, Spots and Discolourations of the Skin are Signs of weak Fibres; for the lateral Vessels, which lie out of the Road of Circulation, let gross Humours pass, which could not if the Vessels had their due degree of Stricture. † Atro-

* *Redundance of ill Humours.*

† *Decay of the Flesh.*

phy, as denoting a Destruction or Obstruction of the Vessels, which carry the Nourishment, and Dropsies, proceed from a Laxity of the Fibres, being too weak to return the Fluid. In a Word, the most part of chronical Distempers proceed from Laxity of the Fibres; in which Case the principal Intention is to restore the Tone of the solid Parts; all Attempts without this, will prove unsuccessful; and if the Tone of the Solids is restor'd, the Disease will go off in time.

7. It is evident that the Aliment of Persons with weak Fibres, ought to be such as requires but a small Force to convert it into animal Substances, such is that mention'd *Chap. V. Prop. IV, V.* As Milk, which is the Chylous Part of an Animal already prepar'd, the Cheesy Part is separated and dissolv'd by the Bile, and the more Serous and Spiritous Part enters into the Blood; meer Whey is
too

too relaxing : Eggs taken warm from the Hen ; for the most elaborate and spiritous Part is lost in the dressing : Broths made of Flesh, which are the nutritious animal Juices separated from the solid Parts ; the alkalescent Quality of Broths may be corrected, if necessary, by mixing them with some Acid : Decoctions, and Creams, or Jellies of well fermented Bread (for Fermentation, as was hinted *Chap. III. Prop. IV.* destroys the glutinous oily Viscidity with which mealy Substances abound) austere Wines diluted with Water, which cool more than Water alone, and at the same time do not relax ; Vegetables with an acid austere Juice, mention'd *Chap. V. Prop. IV. VIII.* are all proper in this Case. Relaxation from Plenitude is cur'd by spare Diet, and from any Cause by that which is contrary to it. Care must be taken in contracting the Fibres, not to obstruct the Vessels.

P R O P.

P R O P. III.

To explain the Symptoms, Causes, and proper Diet of too strong and too elastick Fibres.

1. A State opposite to the former is too great Rigidity and Elasticity of the Fibres, which is such a degree of Cohesion as makes them inflexible to the Causes to which they ought to yield, so as to preserve the Animal in Health: Too great Elasticity is that Quality by which they not only resist against * Elongation, but restore themselves with too great Pressure and Force upon the moving Fluid.

† Rigidity of the Organs is such a State as makes them resist that Expansion, which is necessary to carry on the Vital Functions. Rigidity of

* *Lengthening.*

† *Hardness, Stiffness.*

the Vessels and Organs must necessarily follow from Rigidity of the Fibres, both as the Fibres are their constituent Parts, and likewise because by the strong Force of the Heart, and Motion of the Fluids, many of the Solids are compacted into one, and the Canals, through which they flow'd, abolish'd, as by *Prop. VII. Chap. II.*

2. True Health consists in such a Flexibility of Fibres as yield to the Force of the Heart, so as to admit the influent Fluid, and then such a due Spring to restore themselves so as to drive it forward; for if the Canals were intirely rigid, or the Force of the Fibres in restoring themselves were either in *Æquilibrium* with, or exceeding that of the Heart, there could be no Circulation, even if the Vessels drive back the Blood with too great a Force upon the Heart, it will produce * Polypose Concre-

* *Solid Substances.*

tions in the Ventricles of the Heart, especially when the Valves of the Heart are apt themselves to grow too rigid; if but one Drop of Blood remain in the Heart at every Pulse, those in many Pulses will grow to a considerable Mass.

3. It is easy, by the Laws of Hydraulicks, to determine the natural Effects of such a Constitution, which is the Parent of acute Diseases, as Laxity of Chronical.

4. The Cause of such a Disease, besides the natural Constitution and Frame of the Body, is too long a Continuance of such Diet as strengthens the Fibres; hard Exercise, or Labour, such as use it, according to *Hippocrates*, are not easily cur'd of Pleurisies; such a Constitution is easily known by the outward Appearances of the Body being lean, warm, hairy, scraggy, dry, without a Disease, with hard and firm Muscles; for the great Force by which the

small Vessels restore themselves, makes them grow narrow, expelling the Liquor they contain, and scarce admitting what is influent, by which the Vessels grow hard and contracted; lastly, by the Strength of the Pulse, and the Force of the vital Actions.

5. The Rules of Diet for such a Constitution may be drawn from *Prop. IV.* of the foregoing Chapter. *First*, Abstinence from things us'd in the contrary State of too great Laxity. Milk is too nourishing, but Whey proper as an Emollient. Austere and strong Wines are improper, but much more so are inflammable Spirits, which harden the Fibres; Water is the proper Drink, being strongly relaxing; there is no better way of suppling a Carcass, than by drenching it in Water: All emollient Nourishment, such as Fruits, which contain a Mucilage, and may be boil'd into Jellies: Pot-Herbs
of

of the emollient kind, such things as resolve and cleanse, that is, take away any tenacious Solid which adheres to the Fibres, such are vegetable Sopes, the chief of which is Honey. The animal Food should be prepar'd in Broths rather than in any other Form. In this Case are proper all things which increase Fat, all oily Substances, the animal Oils, Cream, Butter, Marrow, farinaceous Substances unfermented, as little Salt in the Aliment as possible; for Salt hardens.

6. From those two Causes of the Laxity and Rigidity of the Fibres, the Methodists, an ancient Set of Physicians, deriv'd all Diseases of human Bodies with a great deal of Reason; for the Fluids derive their Qualities from the Solids. There seems hardly any other Account to be given of the different animal Secretions, than the different Configuration and Action of the solid

Parts, which from one homogeneous Liquor separate so many various Fluids in an animal Body; and I am of opinion, that in most Cases where the Juices are in a morbid State, if one could suppose all the unsound Juices taken away, and sound Juices immediately transfus'd, the Quality of the solid Parts remaining the same, after many Circulations the sound Juices would grow morbid. The Methodists err'd in so far as they consider'd the Disease inhering only in the Vascular Solids, and applied their Remedies chiefly to them, not reflecting that the Solids themselves can be changed by working upon the Fluids.

P R O P. IV.

To explain the Causes and proper Diet of Plethorick Constitutions.

The Diseases of the Fluids are, first a Plethora, or too great Abundance of
laudable

laudable Juices; the Causes of which are strong chylopoetick Organs, Plenty of wholesome Diet, a middle Age, sanguineous Temperament (of which afterwards) Laziness, or want of muscular Motion, moist Air, Suppression of usual Evacuations. The Effects are Impatience of Heat, or Labour, Extension of the greater Vessels, Compression of the lesser, * Lacerations upon small Causes, a Stoppage of Circulation by too great a Weight upon the Heart, Suffocation, &c. The Remedies for this Constitution are opposite to the Causes of it; spare Diet, Exercise, and proper Evacuations; only it must be observ'd that Plethorick Bodies are not to be cur'd by long Abstinence, because in that Case the most liquid Parts fly off, and the grosser remain: Blood-letting removes a Symptom, but often increases the Force of the chylopoetick

* *Tearing, breaking.*

An ESSAY concerning
Organs, and consequently the Disease.

P R O P. V.

To explain the Symptoms and proper Diet of sanguineous Constitutions.

1. A sanguineous Constitution (in the common Acceptation of the Word) that is, of a Person who abounds with Blood, is different from a Plethorick; the common outward Sign of such a Constitution is a florid Appearance in the Countenance, a Blueness and Fulness of the Veins, Softness of the Flesh, a particular vivid, fair, but not pale Colour of the Skin; such a Constitution with a great Appearance of Health is subject to many Diseases.

2. The Blood, as was observed *Prop. V. Chap. II.* consists of red Globules, swimming in a thin Liquor call'd Serum, the red Part is
smallest

smallest in Quantity. The red Globules are elastick, and will break, one red Globule into six small, and then they will turn yellow, those yellow Globules break into others still smaller, and then they grow more white and transparent; the Vessels which admit the smaller Globules, cannot admit the greater without a Disease. Therefore as the Blood passeth through narrower Channels, the Redness disappears more and more. All the Chyle is white, and acquires this red Colour by Circulation. A free and strong projectile Motion of the Blood must occasion a florid Appearance upon the Skin in such Constitutions, because a stronger Motion forceth the red Part into more capillary Vessels. To which likewise there is commonly another Cause that concurs, the greater Transparency of the Vessels occasioned by the Thinness and Delicacy of their Coats. That this is the Case of sanguineous

guineous Persons is plain from their great Veins appearing blue and transparent by the Colour of the Blood in them.

3. Therefore such Persons seem to be susceptible of Diseases, that depend upon a strong projectile Motion of the Blood, and too great Thinness and Delicacy of the Vessels; by the first they are subject to Inflammatory Distempers, for the greater Action or Reaction of the Fluids and Solids produceth a greater Attrition, to which Heat is proportional: This great Attrition must produce a great Propensity to the putrescent alkaline Condition of the Fluids, and consequently to Suppurations: a stronger projectile Motion of the Blood, must likewise occasion greater Secretions, and loss of liquid Parts; and from thence perhaps Spissitude and * coriaceous Concretions, which are always

* *Tough like Leather.*

found in Animals that die of too strong a Circulation.

If the Vessels are in a State of too great Rigidity, so as not to yield, a strong projectile Motion occasions their Rupture and Hæmorrhages; especially in the Lungs, where the Blood is abundant; if the Vessels, instead of breaking, yield, it subjects the Person to all the Inconveniences of an erroneous Circulation, (that is, when the Blood strays into the Vessels destin'd to carry Serum or Lymph, according to *Prop. V. Chap. II.*) From whence will follow Obstructions and Inflammations, and as the Thinness, and Delicacy of the Vessels probably reigns through the whole System, it must affect the Glands and Lymphatick, as well as the Blood-Vessels, and such Constitutions must be subject to glandulous Tumours, and Ruptures of the Lymphatick, and all the Diseases thereon dependent.

4. The natural Helps from Diet are, first, Moderation in the Quantity, all things which relax the Veins; for what does so, prevents too vigorous a Motion through the Arteries: Therefore relaxing and cooling are proper Intentions in the Diet, only where there are Signs of too great a Thinness in the Fluids, subacid Substances are proper, tho' they are a little Astringent; for Persons who take a great deal of Vinegar, abate their florid Colour, which is the Disease of such a Constitution.

For such a Diet the Reader is refer'd to the foregoing Chapter.

A saline Constitution of the Fluids is either acid, alkaline, or muriatick, as in the Sea-Scurvy: Of these in their Turns.

P R O P. VI.

To explain the Symptoms, Causes, and proper Diet of acid Constitutions.

1. It

1. It has been demonstrated before, that the Juices of a sound Animal are neither acid nor alkaline, by the Experiments mention'd *Chap. IV.* All the Substances, fluid and solid, of an Animal fed even with acescent Substances, yield by Fire nothing but alkaline Salts. Those Experiments which endeavour to shew the contrary, have been made upon Animals which had taken much Sea-Salt, which is never totally changed in an animal Body. The ingenious and learned *Boerhaave* fed a Sparrow with Bread four Days, in which time it eat more than its own Weight, and yet there was no Acid found in its Body or Excrements: The Reason of this is, that the vital Force of a sound Animal is capable to transmute the acid Substances it takes in Aliment, into soft nutritious animal Liquids, by its vital Force: (By which is understood the Sum of all those Powers in an animal Body which con-

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verts its Aliment into Fluids of its own Nature.) A Cow fed with Trefoil, Daifies, Sorrel, gives Milk in which there is not the least Acidity; but if this vital Force is weak, it is insufficient to subdue the Acidity of the Substances taken by the Mouth. The Liquors which are made of fermented Plants, as Wine, and Malt Liquors, standing in a Heat not greater than that of a Human Body, turn sour; and so they will in a Human Body that has not sufficient vital Force to change them, which makes no more Alteration in such Substances than a Vessel with the same degree of Heat and Moisture. Thus weak Stomachs vomit up the Wine that they drink in too great Quantities to be digested, in the Form of Vinegar. Put Bread into the Stomach of a dying Man, and it will follow its own Nature, and undergo the Alteration that is merely the Effect of Heat. A weak Stomach

mach will turn Rye-Bread into Vinegar, and a Plough-man will digest it. Mealy Substances fermented, turn sour; and unfermented, being mix'd with a small Quantity of Water, they turn viscid, and then hard like Stones: Accordingly, given to a weak Child, they still retain their Nature, for Bread will give him the Cholick, and unfermented farinaceous Substances will fill his Belly with a viscous Humour.

2. As no Acid is naturally in an animal Body, but must be taken in by the Mouth; so if it is not subdu'd in the Passages of the Chyle, it may get into the Blood; and if there is not a sufficient Quantity of Blood, and Strength of Circulation to subdue it, it may infect the whole Mass of the Fluids; but this is a morbid State. The Experiments made upon Chyle have never discover'd any Acidity in it; but the Subject of these Experiments has
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been always the Chyle of healthy Animals.

3. The first and principal Seat of Acidity is the Stomach; this Quality of the Chyle is in some measure taken off in the *Duodenum*, and by the Mixture of Bile with it, grows less in the other Parts of the Alimentary Duct, and still less in the Thoracick Duct, because great Quantities of animal Liquors have been mix'd with it; but at last it may (as was said before) infect the Blood: Thus it is found by Experience, that the Sweat is sometimes acid, which is a Sign of Recovery after acute Distempers, where the Blood was in the contrary alkalescent Disposition.

4. The antecedent Concomitants and Effects of such a Constitution are Acids taken in too great Quantities: Sour Eructations, a craving Appetite, especially of terrestrial and * ab-

* *That sucks in a Liquid.*

torbent Substances, the Case of Girls in the Green-Sickness, Sourness in the Stomach, Pain in the Stomach, (which, tho' sometimes occasion'd by an acrid Bile, this Cause may be distinguish'd by the Absence of other Symptoms) Colical Pains about the Navel; the *West-India* dry Gripes are perhaps occasion'd by the too great Quantities of Acids, as Lime-Juice in Punch. The Colicks of Infants proceed from Acidity, and the Air in the Aliment expanding itself while the Aliment ferments; for Oil of Vitriol will throw the Stomach into involuntary Contractions: Inactivity and Change of Colour in the Bile; for Acids change the Colour and Consistence of it. Bile is the chief Instrument of Digestion, and, as was said before, *Prop. V. Chap. I.* can attenuate the cheesy Substance in the Stomach of a Calf, and render it fluid; hence bilious Constitutions easily digest Cheese: a sour Smell of

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the Fæces (when the Bile is redundant, they smell cadaverous) acid Sweats, Paleness of the Skin; for, as was observ'd before, taking much Vinegar will make the Lips pale. It is possible that Tumors in the Breasts may be the Effect of Acidity in the Milk, and Convulsions in Infants may be occasion'd from Acidity passing into the Blood, and affecting the tender Fibres of the Brain. Some sorts of cutaneous Eruptions are occasion'd by feeding much on acid unripe Fruits, and farinaceous Substances.

5. Acidity, as it is not the natural State of the animal Fluids, but induc'd by Aliment, is to be cur'd by Aliment, with the contrary Qualities; for which the Reader is refer'd to the foregoing Chapter. Anti-acid Medicines are ineffectual without a Diet of the same kind; all animal Diet is alkalescent, especially of such as feed upon other Animals,

mals, as Insects, Fish, and especially Shell-Fish. Acidity in the Infant may be cur'd by a Flesh-Diet in the Nurse. There are a great many anti-acid Vegetables which do not easily ferment, but putrify, as all the warm Anti-scorbuticks: Celery, Asparagus, Cabbage, Turnips, Carrots, Onions, Leeks, Radishes, Mustard, Eringo-Roots and Nettles, are Anti-acid. In Cases of Acidity, Water is the proper Drink; its Quality of relaxing too much may be corrected by boiling it with some animal Substances, as Ivory, Hartshorn: Abstinence from fermented Liquors is necessary.

6. This Distemper is most incident to Children, because of the Debility of their Fibres and Milk-Diet, to such as lead a sedentary Life, to those who take much Bread and Wine, and vegetable Acids, to Girls dispos'd to the Green-Sickness, and to Artificers who deal in the Pre-

An ESSAY concerning
 parations of Acids, as Distillers,
 Dyers.

P R O P. VII.

To explain the Symptoms, Causes, and proper Diet of Constitutions, which abound with a spontaneous Alkali.

1. A Constitution opposite to the former, is that which abounds with a spontaneous Alkali. No Animal un-putrify'd, being burnt, yields any alkaline Salt, but putrify'd, yields a volatile Alkali, therefore in a healthy Animal no true Alkali is found; but as an Animal degenerates from this State, by such Diseases as increase the Attrition and Heat of the Fluids, the animal Salts formerly benign approach towards an alkaline Nature. Human Blood, when it is first let, is mild, and will not make the Eye or a fresh Wound smart. Let it stand in a degree of Heat equal to that of

a Human Body, it will grow in three Days foetid, the Salt of it volatile and alkaline, fermenting with Acids, the Oil that remains volatile and rancid; the Blood in the Vessels may at last arrive at the same State, but must pass thro' infinite Degrees, and before it comes to the last the Animal will be destroyed. All animal Substances expos'd to the Air, turn alkaline of their own accord, and some Vegetables by Heat will not turn acid, but alkaline: Every Plant in that State of Putrefaction by *Prop. III. Chap. I.* is converted, as it were, into an animal Substance, by Chymical Trials, yielding the same Contents.

2. The Causes of such a Distemper is a Diet of alkalescent Substances. If a Woman should live upon Vegetables, Bread, and fermented Liquors, her Milk would be acescent, or ready to turn sour; if only an animal Food, her Milk would

be apt to turn foetid and putrid, but not sour.

If it was possible to take Mustard in great Quantities, it would quickly bring the Blood into this alkaline State, and destroy the Animal; the warm antiscorbutical Plants taken in Quantities, will occasion stinking Breath, and corrupt the Blood. All Animals that live upon other Animals have their Juices more alkalescent, than such as live upon Vegetables, and for that Reason perhaps Fishes have this Quality more than terrestrial Animals; for in the open Air they putrify sooner, by what was said *Prop. I. Chap. IV.* An Animal with a strong vital Force of Digestion will turn Acids into animal Substances; but if its Food be entirely alkalescent, its Juices will be more so. No Person is able to support a Diet of Flesh and Water without Acids, as Salt, Vinegar, and Bread, without falling into a putrid Fever.

Fever. If his Diet consisted of Snails, Fish, especially their Livers, Shell-Fish, Vipers, ravenous Birds, as some who feed upon Insects and alkaliescent Vegetables, the Effect would happen sooner. Eggs and *Spanish* Wines taken in great Quantities, without Exercise, will occasion a Fever. Abundance of good Blood and laudable Juices disposeth towards this alkaliescent State; so do likewise long Abstinence, (by which the Fluids are depriv'd of a Dilution of the cooling Emulsion of fresh Chyle. See *Prop. VIII. Chap. II.*) great Strength of the Bowels, and a right State and Abundance of Bile. Bile is an Anti-acid. Another Cause is a vigorous Action of the Vessels, through which the Juices circulate, which is the Reason that strong, healthy, and young People are more in peril by pestilential Fevers, than the weak, and old.

Violent animal Motion produceth this alkaline State. Two Bones rubb'd hard against one another, or with a File, produce a fœtid Smell. It is possible to produce a Gangrene by strong Friction, and yet Stagnation of the Fluids turns them putrid.

The Effects of such an alkalescent State in any great degree, are Thirst, and a Dejection of Appetite, which putrid things occasion more than any other; (those who are troubled with Acidity have often a bad Digestion, but a craving Appetite) nidorose Eructations, which are different from acid, Foulness of the Tongue and Palate, a bitter and hot Taste in the Mouth, Thirst, Sickness, Loathing, bilious Vomitings and Dejections of a cadaverous Smell, * iliacal Pains with Heat. These are the Effects of it in the alimentary Diet. Such a

* *In the small Guts, about the Navel.*

State dissolves the Blood, and disposeth it towards Putrefaction, hinders Nutrition; for no Chicken can be hatch'd of a rotten Egg, the Blood turning acrimonious corrodes the Vessels, producing Hæmorrhages, Pustules, red, lead-colour'd, black, and gangrenous, and almost all Diseases of the inflammatory kind.

3. The Aliment of such Persons ought to be acescent Substances, much Bread, and Seasoning of Vinegar, and other Acids without Spices; in a Word, such as is describ'd in the foregoing Chapter. Acids keep animal Substances from Putrefaction; for neither Blood, Flesh, or Fat will putrify in Vinegar, or sour Wine: The Effect of the strongest Acids, even Oil of Vitriol, in putrid Fevers, is known by Experience, in which alkaline Spirits must be hurtful; farinaceous things, especially such as are made of Oats, are proper, as having an acescent Quality; it is a common Mistake that People

ple in such a State should forbear Wine; thin Wines, as Rhenish, Moselle mix'd with Water, are proper in a Fever. But when the Distemper is attended with great Heat, Milk mixed with Water is the properest Drink. The properest Seasoning is Salt-Petre; Sea-Salt creates Thirst, Water is the only Diluent; but as it has no Acidity in it, it is better mix'd with Limon, or with the Rob or Jelly of some acid Fruit, sometimes the demulcent Aliment mention'd *Prop. IV.* of the foregoing Chapter, will be of great Use.

The muriatick Scurvy, induced commonly by too great Quantity of Sea-Salt, and common among Mariners, is rather an artificial than a natural Disease, spontaneous only in few who have a great Disposition towards it. Its common Symptoms are a saline Taste in the Spittle, Itching and red Erosions of the Skin, great Thirst, Driness of the Skin, a
lixivial

lixivial Urine sometimes with a fatty Substance like a thin Skin a-top, Relief from watery and acid Substances. The Cure of this Distemper lies in a Diet of fresh unsalted things, watery Liquors acidulated, farinaceous emollient Substances, sour Milk, Butter-Milk, acid Fruits, and avoiding of the hot Antiscorbuticks of the Mustard kind, the Rule of Diet is not much different from that in the alkaline Scurvy before-mention'd.

5. It is of great Importance to know whether cutaneous Distempers proceed from an acid or alkaline Cause, because, according to the Difference of the Cause, there must be quite opposite Methods of Cure; they may be distinguish'd first by the Difference of the Diet that occasion'd them; crude Aliment, farinaceous Substances, unripe Fruits, and other Acescents, will sometimes produce the Scurvy and Itch, and even Leprosies depending on the same Cause, in
which

which volatile Salts, and such as are taken from animal Substances are indicated. *Secondly*, From the Absence of the concomitant Symptoms of the one, and the other: In the acid Acrimony there is not Thirst, Heat, nor so great a Dejection of Appetite as in the Alkaline. *Thirdly*, The Erosions of the Skin are not of so deep a Colour in the Acid as Alkaline. In general, an Attention to the Symptoms before enumerated may be a Guide to the Diet.

6. Another Constitution of the Fluids of a Human Body, may be properly call'd Glutinous or Phlegmatick: Phlegm amongst the Ancients signified a cold viscous Humour, contrary to the Etymology of the Word, which comes from φλέγω, to burn; but amongst them there were two sorts of Phlegm, cold and hot. A cold Tumor they call'd simple Phlegmonem; when it came from glutinous Blood, they call'd

call'd it Phlegmonem Phlegmonodem.

7. Phlegm, or Pituite, is a sort of Semi-fluid, it being so far solid, that one Part draws along several other Parts adhering to it, which doth not happen in a perfect Fluid, and yet no Part will draw the whole Mass, as happens in a perfect Solid.

8. The Pituite, or Mucus, secern'd in the Nose, Mouth, Palate, Stomach, Intestines, and Wine-Pipe, is not an excrementitious, but a laudable Humour, necessary for defending those Parts from which it is secern'd, from Excoriations, as happens in the Nose, when the Pituite is too thin. The Want of it in the Wind-Pipe occasions Hoarseness in the Gullet, and Difficulty of Swallowing. The Pituite defends the Intestines from the Acrimony of the * Ingesta, and lubricates the Extremities of the Joints.

* *Things taken inwardly.*

Therefore those are mistaken who imagine that Phlegm cannot be too much purg'd off; but when the Phlegm is either too viscous, or separates in too great a Quantity, it brings the Body into a morbid State; this viscous Phlegm seems to be the * vitrious Pituite of the Ancients.

9. The first Seat of it is the alimentary Duct, where it creates Crudity, Dejection of Appetite, a Sense of † Repletion and Sickness; for it hinders the natural Contraction of the Fibres, and that Sense of Irritation which produceth Hunger. A Sensation of Fulness without eating, is a sure Sign of a Phlegmatick Stomach. In the Intestines it occasions a Tumour of the Belly, with an Atrophy in the rest of the Body; for the viscous Crust stops the Entry of the Chyle into the Lacteals. The Case of rickety Children. In the

* Like Glass.

† Fulness.

Body it often affects the Lungs. Phlegm may be so concocted in the Lungs by the Evaporation of its most liquid Parts, as to shut up the Passages of the Bronchea: and it makes Paleness in the Skin; for as it was observ'd before, our Aliment in the Form of Chyle before it circulates with the Blood, is whitish; by the Force of Circulation it runs through all the intermediate Colours, till it settles in an intense Red; as much as the Force of Circulation is deficient, so much will the Blood fall short of that florid Colour, and Persons in that Condition are call'd Leucophlegmatick; from this Phlegm proceed white, cold, Tumors, Viscidity, and consequently Immeability of the Juices; hence Lethargies in old People.

10. The Causes of this Phlegmatick Constitution are, *First*, Viscid Aliment, as of unripe Fruits, farinaceous Substances unfermented, and
taken

taken in great Quantities. The Flowers of Grains, mix'd with Water, will make a sort of Glue. Meals have an Oil in them which makes their Parts adhere. *Secondly*, Great Loss or Want of Blood, which is a natural Sope, preserving itself and the Aliment from Coagulation by constant Motion. *Thirdly*, Weakness and Indigestion in the Alimentary Duct, which leaves the Aliment viscous. *Fourthly*, A Defect, or bad Constitution of the Bile (which is the chief Resolvent of the Aliment) phlegmatick and bilious Constitutions are opposite. *Fifthly*, Dissipation of the most fluid Parts by Heat, or some great Evacuation; therefore profuse Sweats, and Fluxes of Urine, dispose towards this Constitution by thickening the Phlegm. *Sixthly*, Stagnation from the Debility of the Instruments of Excretion; for if the Pituite stagnates, it must grow viscid from Heat. These are the Causes
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and Symptoms of a Phlegmatick cold Constitution; but Spissitude attended with Heat, grows inflammatory. But no Cause is more frequent and powerful in producing this Distemper than a sedentary Life, and no Remedy more effectual than Exercise.

11. The Symptoms point to the Cure. All the Methods of attenuating, mention'd *Chap. V. Prop. IV.* well fermented Bread, and well fermented Liquors; Fermentation destroys the Viscidity of farinaceous Substances. High season'd Aliment is proper for Phlegmaticks. Spices, Onions, Garlick, dissolve Viscidity. Water impregnated with some stimulating Substance, which both dilutes and attenuates. Hot Mineral Waters are the best Dissolvers of Phlegm. All sorts of Nourishment which promote Heat, and a vigorous Motion of the Blood, and for that Reason Broths made of the most volatile and alkalescent Parts of Animals.

12. A Disease opposite to this Spiffitude, is too great Fluidity; the Symptoms of which are Excess of animal Secretions, as of Perspiration, Sweat, Urine, Liquid Dejectures, Leanness, Weakness, and Thirst. The Methods in such a Case must be opposite to the former. Farinaceous Substances and watery Liquors, unfermented Gellies of animal and vegetable Substances, all such things as are describ'd, *Prop. IV. Chap. V.*

13. Another Constitution is the oily or fat; animal Fat is a sort of amphibious Substance; it is scissile like a Solid, resolvable by Heat not greater than what is incident to Human Bodies, circumscrib'd and contain'd in proper Vessels, like a Fluid. The Symptoms of this Constitution are too manifest to want a Description, it co-incides often with the plethorick and phlegmatick Constitutions above describ'd. It is but one Species of Corpulency, for there may
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be Bulk without Fat, from the great Quantity of muscular Flesh, the Case of robust People. An Animal in the course of hard Labour seems to be nothing but Vessels, Bones, and muscular Flesh. Let the same Animal continue long in Rest, it will perhaps double its Weight and Bulk. This Superaddition is nothing but Fat, or Oil; and in this Sense an Animal perhaps never arrives at its full Growth.

14. The common Causes of this Distemper are a particular, and perhaps a * gentilitious Disposition of Body, which seems to consist in the Chylopoetick or Organs of the first Digestion being strong, and the Fibres of the circulating Vessels, especially those about the *Panniculus carnosus* being lax, according to the Doctrine of the second Chapter. By the Action of the Fibres of the Vessels upon the Fluids, the oily Parts of the Chyle are intimately mix'd with the

* *Family*

Blood, which by *Prop. III. Chap. II.* will swim a-top of it several Hours after Repast; when this Action is not strong enough, and the Chyle extremely copious, perhaps the thicker Oil is never intirely subdu'd; some sorts of cramm'd Fowl have always a milky Juice swimming a-top of their Blood. *Secondly*, Quantities of oily Nourishment, Milk, Butter, and oily fermented Liquors. *Thirdly*, All things which occasion Coldness in the Skin so as to stop Perspiration, by which the oily Parts are congeal'd, which Heat resolves and attenuates. The Inhabitants of cold moist Countries are generally more fat than those of warm and dry; but the most common Cause is too great a Quantity of Food, and too small a Quantity of Motion, in plain *English*, Gluttony and Laziness. I am of opinion that spare Diet and Labour will keep Constitutions, where this Disposition is the strongest, from being fat. You may see in an Army
 forty

forty thousand Foot-Soldiers, without a fat Man amongst them; and I dare affirm, that by Plenty and Rest twenty of the Forty shall grow fat. Much Sleep increaseth Fat, not only as it is a long Cessation of Muscular Motion, but by relaxing the solid Parts; the greatest Cures of this Disease have been perform'd by little Sleep. This by the way.

15. The Oil in Animals is necessary for many Purposes; in all for Motion, in some for Nourishment; such accumulate Fat in the Summer, which serves to refresh the Blood in the Penury of Aliment during the Winter, and for that purpose some Animals have a quadruple Caul: But the too great Abundance of Fat subjects Human Constitutions to the following Inconveniencies.

16. *First*, It hinders the Motion of the Joints, making them more heavy, by filling the Spaces occupy'd by the Muscles when they contract and swell.

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Secondly,

Secondly, It subjects them to all the Diseases depending upon a defective projectile Motion of the Blood; for the Blood flows through the Vessels by the Excess of the Force of the Heart above the incumbent Pressure, which in fat People is excessive; and as want of a due Quantity of Motion of the Fluids increaseth Fat, the Disease is the Cause of itself. *Thirdly*, To Suppurations, of which the *Membrana adiposa* is the chief Seat. *Fourthly*, To Danger in inflammatory Distempers; a Fever resolves many things which stagnate, and amongst others the Fat, which being mix'd with the Blood, turns volatile, and occasions an Acrimony much more dangerous than the saline; for Salts can be diluted with Water which Oils cannot. That the Fat is dissolv'd by Fevers, is evident from the great Loss of Fat which People undergo in Fevers. Amongst those, and many other bad Effects of this oily Constitution, there is one Advantage,

tage, that such of them who arrive to an advanc'd Age, are not subject to Stricture and Hardness of Fibres, the Effect of old Age.

17. The Causes above-mention'd lead directly to the Cure; as it is the Product of Gluttony and Laziness, Exercise and Abstinence is the Antidote; it has been observ'd that a feverish Heat resolves Fat, and therefore what produceth this Effect in a small degree, so as not to endanger the Life of the Patient, must be proper, such are all acrid and stimulating Substances. Salt, Pepper, Garlick, Onions, Vinegar, &c. taken in Quantities, will produce a momentary Fever. Salt taken in great Quantities will reduce an animal Body to the great Extremity of Aridity, or Driness. The Ancients were so sensible of the Force of Stimulating in this Case, that the celebrated Remedy against Fat was a certain Quantity of the Vinegar of Squills taken

every Morning; for the same Reason, saponaceous Substances, as Sugar, Honey, the Juices of ripe Fruits, Pot-Herbs, with Abstinence from fat Meat, and even an entire Milk-Diet, by its Thinness, are very effectual. Unfermented watery Liquors are hurtful only as they relax; but on the other hand, Quantities of oily fermented Liquors commonly increase the Disease. All things which promote the animal Secretions, especially Sweat, and insensible Perspiration, and for that Purpose even Water taken in Quantities are sometimes useful. Salts mix'd with Fat, harden it, and acid things congeal Oil; Spirit of Nitre will turn Oil of Olives into a sort of fatty Substance; but Acids may be us'd as stimulating. If acid things were us'd only as Coolers, they would not be so proper in this Case, in which it is necessary to keep up a considerable degree of Heat; but for their fore-mention'd Qualities they
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are strongly indicated in the inflammatory Distempers of fat People, where the Oil disposeth to a rancid Putrefaction; but Abstinence being the chief dietetick Method of preventing or curing the Disease, leads me to say somewhat of the Quantity of Aliment in general.

18. By *Prop. VIII. Chap. II.* The frequent Repetition of Aliment is necessary, not only for repairing the Fluids and Solids, but to keep the Fluids from the putrescent alkaline State, which they acquire by constant Attrition without being diluted; from whence it follows, *First*, That long Abstinence may be the Parent of great Diseases, especially in hot bilious Constitutions, and extremely painful to acid Constitutions by the uneasy Sensation it creates in the Stomach. *Secondly*, That the Quantity of Aliment necessary to keep the Animal in a due State of Vigour, ought to be divided into Meals at proper Inter-

Intervals in the natural Day, by which Method neither the chylopoe-tick Organs, nor the Blood-Vessels are overcharg'd, nor the Juices depriv'd too long of fresh Recruits of Chyle. *Sanctorius* confirms this Maxim in his Doctrine of Perspiration.

19. The great Secret of Health is keeping the Fluids in due Proportion to the Capacity and Strength of the Channels through which they pass; but the Danger is less when the Quantity of the Fluid is too small, than when it is too great; for a smaller Quantity of Fluid will pass where a larger cannot, but not contrariwise.

20. When the Quantity of the Fluid is too small, the elastick Power of the Canal (in which Life consists) exerts itself with too great a Strength upon the Fluid. In which Case there must follow too great a Dissipation of the Fluid, Driness, and a gradual Decay. In too great Repletion, either the elastick Force
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of the Tube is totally destroy'd; or if it continue proportional to the degree of Extension, like a Bow too strongly drawn, it throws the Fluid with too great a projectile Force forward through the Vessels, and back upon the Heart, and subjects the Animal to all the Diseases depending upon a Plethory, and may bring it into immediate Danger. Therefore the Diseases depending upon Repletion are more acute and dangerous than those that depend upon the contrary State. The Instances of Longevity are chiefly amongst the Abstemious. Abstinence in Extremity will prove a mortal Disease, but the Experiments of it are very rare.

21. Such as have an imperfect Circulation through any Organ of the Body, should never charge their Vessels with too great a Quantity of Chyle; this was observ'd *Prop. II. Chap. II.* of the Lungs, and is equally true in any other Case, as in Head-aches,

aches, which eating little relieves, and eating and drinking much occasion. A Sensation of Drowsiness, Oppression, Heaviness, and Lassitude, are Signs of a too plentiful Meal, especially in young People.

22. The Measure of insensible Perspiration discover'd by weighing, is the best Rule of Diet; therefore in fat People the Use of vaporose or perspirable Food, and Exercise (both which increase Perspiration) are proper.

23. The Constitution of the Air disposeth the Inhabitants of one Country more to be fat, than that of another. *Sanctorius's* Experiment of Perspiration being to the other Secretions as 5 to 3, does not hold in this Country, except in the hottest time of Summer; so that the Action of *Paduan* Air in promoting Perspiration the whole Year round, is equal to ours in the Month of *August*.

24. From

24. From the foregoing Doctrine, a common Case both of fat and lean Men having great Stomachs may be accounted for; by the last having a great Perspiration, and some of the perspirable Matter in the first not sufficiently attenuated, stopping at the Surface of the Skin, and as it were carried about him. Hunger is only a Warning of the Vessels being in such a State of Vacuity as to require a fresh Supply of Aliment; after Secretions the Vessels of the fat and lean Man are equally empty, for the Fat is as much out of the Thred of Circulation as what is evaporated, and perhaps the Fat in that Case becomes like a morbid Excrescence, requiring a superfluous Nutrition.

25. Infants and old People support Abstinence worst. The first from the Quantity of Aliment consum'd in Accretion, the last from their Weakness, and the small Quantity of Aliment taken at once. The
middle-

middle-aged support it the best, because of the oily Parts abounding in the Blood.

26. From the foregoing Principles follow naturally the Hippocratical Rules of Diet in Fevers, of giving more or less, more thick, or more thin Aliment, according to the foreseen time of the Duration of the Fever; for Example, in an Ephemera none, because of its Termination in one Day, in a Fever of four Days Duration less than in one of eight. And as the Fever comes to its Height, still subtracting from the Quantity of Aliment, and making it more diluent and thin.

27. We come now to what we may call the earthy or atrabilarian Constitution, where the spirituous and most fluid Parts of the Blood are dissipated, that is the Spirit, Water and subtile Oil so much evaporated as to leave the Salts, Earth, and grosser Oil in too great a Proportion.

portion. The Blood grows darkish and thick, such a Constitution the Ancients call'd Atrabiliarian, or Melancholick: Melancholy signifying in *Greek*, black Gall; whether there be any such Humour as black Gall, is only a Dispute about Words. *Hippocrates* gave such an Humour this Name, and that is sufficient; besides it is Matter of Fact, that in the Extremity of this Disease, the Gall itself will turn of a blackish Colour, and the Blood verge towards a pitchy Consistence.

28. The Signs of a Tendency to such a State, are Darkness or Lividity of the Countenance, Dryness of the Skin, Leanness, a penetrating quick Genius, a slow Pulse and Respiration. The Causes of it are all such as expel the most volatile Parts of the Blood, and fix the Residue: Great Applications of the Mind to one Object, either such as produce Sadness, or great Joy, both which
equally

equally dissipate the Spirits, and immoderate Exercise in hot Air with unquench'd Thirst: Aliments of hard Digestion, as dry'd and salted Flesh, unripe Fruits, farinaceous Substances unfermented, and likewise immoderate Use of Spirituous Liquors.

The Effects of such a vapid and viscous Constitution of Blood, are Stagnation, Obstructions, Acrimony, Putrefactions, Viscidity, an imperfect Secretion of the Gall, a defective Circulation, especially in the lateral Branches destined to separate the more fluid Parts, and therefore viscous, and sparing Secretions in the Glands: The Blood moving too slowly through the * celiack and mesenterick Arteries, produce various Complaints in the lower Bowels and † Hypochondres; from whence such Persons are call'd Hypochondriack:

* *Arteries of the Lower Belly.*

† *Under the short Ribs about the Belly.*

Such as Sensation of Weight, Anxiety and Repletion, a bad Digestion; from whence different kinds of Aliment acquire such a State as they affect of their own Nature; acescent, if the Diet is of acid Vegetables; and alkaline or nidorose, if of animal Substances, especially Fat, which remains rancid so as the Spittle will sometimes flame in the Fire. This Indigestion proceeds from the Inactivity of the Gall, which likewise occasions a Constipation of the Belly, and a Difficulty of being purg'd. The Urine is sometimes limpid, sometimes thick, which latter is often a Sign of Recovery. The Obstruction of the Pituite in the lower Belly, forceth it upon the salivary Glands, and produceth Spitting.

29. Such a State of the Fluids at last affects the tender capillary Vessels of the Brain, by the Viscidity and * Immeability of the Matter impacted

* *What renders impassable.*

in them, and disorders the Imagination, and at last produceth Corruption in the Bowels of the lower Belly.

30. It is plain, that the Removal of such a Disease is not to be attempted by active Remedies, any more than a Thorn in the Flesh, or pitchy Matter adhering to a Thread of Silk is to be taken away by Violence; what is viscid, ought to be gently attenuated, diluted and carried off. That all Substances which do heat, will still dissipate the fluid Parts more, and consequently increase the Disease: Therefore Water impregnated with some penetrating Salt, is found to have great Effects in this Distemper. The Diet ought to be opposite to the particular Acrimony, whether acid or alkaline, which it is easy to guess at by N^o. 5. of this Proposition. It ought to be demulcent, in both Cases light, and of easy Digestion, moistening, and resolvent.

vent of the Bile; of such Nature are vegetable Sopes, as Honey, and the Juices of ripe Fruits, some of the cooling, lactescent, papescent Plants, as Cichory, Lettuce, Dandelion, which are found effectual in hot Countries. The Diet proper for all the Intentions in this Case, the Reader may see in the foregoing Chapter.

P R O P. VIII.

To draw a few general Inferences from the foregoing Doctrine.

From the Doctrine of this short Essay it is as easy to determine the Rules of Diet in the different natural States, as in the different morbid States of a Human Body.

1. By *Prop. VII. Chap. II.* Infancy and Childhood demand thin copious nourishing Aliment, such as lengthens their Fibres without breaking or hardening, because of their Weakness

and State of Accretion. Milk has all those Qualities.

2. By *Prop.* IV. Chap. II. The Solidity, Quantity and Strength of the Aliment is to be proportion'd to the Labour or Quantity of muscular Motion, which in Youth is greater than any other Age, upon which Account a strong and solid Diet would seem to be indicated; but as that Age is still in a State of Accretion, their Diet ought still to be emollient, and relaxing, copious, and without Acrimony.

3. The Diet of a Human Creature full grown, and in the State of Manhood ought to be solid, with a sufficient degree of Tenacity, without Acrimony, their chief Drink Water cold, because in such a State it has its own natural Spirit and Air, (which Heat destroys) with a Quantity of fermented Liquors proportion'd to their natural Constitutions.

4. The

4. The Course of the Fluids through the vascular Solids and the common animal Functions without any Violence, must in length of time harden the Fibres, abolish many of the Canals, and make the Solids grow together; from whence Driness, Weakness, Immobility, Debility of the vital Force both of the first and second Digestion. Loss of Teeth, Depravation of Mastication, the Condition of old Age, which therefore demands a Diet resembling that of Childhood often repeated, but not so copious in proportion to the Bulk, emollient and diluting.

5. From the Doctrine of the fifth Chapter, it is likewise easy to determine the Inconveniencies arising from the Excess of any one sort of Diet. Too much Sea-salt produceth Thirst, Hoarseness, Acrimony in the Serum (which destroys its soft nutritious Quality) Erosion of the small Fibres, Pains, and all

the Symptoms of the muriatick Scurvy.

6. Acids taken in too great Quantities, especially such as are austere, as unripe Fruits, produce too great a Stricture of the Fibres, incrassate and coagulate the Fluids; from whence Pains, Rheumatism and Gout, Pale-ness, Itch, and other Eruptions of the Skin: Substances extremely styp-tick are hurtful to the Nerves, and occasion Palsies.

7. Spices in too great Quantities occasion Thirst, Driness and Heat, quicken the Pulse, and accelerate the Motion of the Blood, dissipate the Fluids; from whence Leanness, Pains in the Stomach, Loathings, and Fevers.

8. Strong Liquors, especially inflammable Spirits, taken in great Quantities, intoxicate, constringe, harden, dry, and stimulate the Fibres, and coagulate the Fluids. They corrode and destroy the inward Coat of
the

the Stomach and Intestines, and if Digestion be a Putrefaction, Spirits must by their natural Quality hinder that; * they produce Debility, Flatulency, Obstructions, especially in the Liver, Fevers, Leucophlegmacy, and Dropsies, as by their stimulating they raise the Spirits for a Moment, to which succeeds a proportional Depression; they create a Habit and Necessity of continuing the same Course, and increasing the Quantity. Liquors in the Act of Fermentation, as Must and new Ale, are apt to produce Spasms in the Stomach, Colick and Diarrhœas.

9. A Diet of viscid Aliment creates Flatulency and Crudities in the Stomach, Obstructions in the small Vessels of the Intestines, in the Mouths of the Lacteals and Glands, Tumors and Hardness of the Belly, Coldness, Pale-

* *Vide Chiselton's Anatomy.*

An ESSAY concerning
ness of the Skin, and Viscidity in
the Fluids.

10. A Diet of oily Nourishment relaxeth the Solids, and particularly the Stomach and the Intestines, (Monks who take a great deal of Oil are subject to intestinal Ruptures) it creates nidorose Eructations, Loathings, oily and bitter Vomitings, obstructs the capillary Vessels by hindering the Entrance of the watery and fluid Part, with which it will not mix; it creates Thirst and Inflammations.

11. A constant Adherence to one sort of Diet, may have bad Effects on any Constitution. Nature has provided a great Variety of Nourishment for Human Creatures, and furnish'd us with Appetites to desire, and Organs to digest them (there is a most curious Bill of Fare in Sir *Hans Sloan's* Natural History of *Jamaica*) as Aliments have different Qualities; a constant Adherence to
one

one sort, may make the Constitution verge to some of the Extremes mention'd in this Chapter; for healthy People, *Celsus's* Rule I. Chap. I. is a good one, *Sanus homo qui bene valet & suæ spontis est, nullis obligare se Legibus debet, nullum cibi genus fugere quo populus utitur, interdum in convivio esse, interdum ab eo se abstinere, modo plus, modo amplius assumere, &c.* The Sense of the whole Passage, is, That a healthy Man under his own Government ought not to tie himself up to strict Rules, nor to abstain from any sort of Food in common Use; that he ought sometimes to feast, sometimes to fast, sometimes to sleep, sometimes to watch more than ordinary, &c. An unerring Regularity is almost impracticable, and the swerving from it, when it is grown habitual, dangerous; for every unusual thing in a Human Body becomes a Stimulus, as Wine or Flesh Meat to one not
us'd

us'd to them; therefore *Celsus's* Rule with the proper moral Restrictions, is a good one for People in Health, and even in Persons diseas'd in any of the Senses of this Chapter, as too strict, too lax, acid and bilious, &c. A constant Adherence to one sort of Diet may carry the Case beyond a Cure, to the contrary Extreme.

12. General Rules about Diet, without Regard to particular Constitutions, are absurd.

13. That with Regard to different Constitutions, the common Distinction of Diet into Vegetable with Water, and Animal with fermented Liquors, is not proper and compleat. *First*, Because in the Enumeration of Constitutions in this Chapter, there is not one that can be limited and restricted by such a Distinction, nor can perhaps the same Person in different Circumstances be properly confin'd to one or the other. *Secondly*, Because a vegetable

getable Diet is not characteriz'd, there is not a general alimentary Quality in which all Vegetables agree; there are Vegetables, acid, alkaline, cooling, hot, relaxing, astringent, acrid, and mild, &c. Useful or hurtful, according to the different Constitutions to which they are apply'd, there may be a stronger Broth made of Vegetables than any Gravy-Soup.

14. As Flesh Diet is generally alkalescent, and many Vegetables are acid and cooling, People of hot bilious Constitutions find themselves extremely well in a vegetable Diet and Water, and the same Persons perhaps had enjoy'd their Health as well with a Mixture of Animal Diet qualify'd with a sufficient Quantity of Acescents, as Bread, Vinegar, and fermented Liquors.

15. The Oil of most Vegetables, in which their nutritious Quality chiefly consists, seems not to be so hard of Digestion as that of Animals;

Animals; fat Meat is harder to digest than the most oily Plant taken as Aliment: Sick People could not take so great a Quantity of melted Fat, as they can of Oil of sweet Almonds.

16. Animal Substances are more nourishing, and more easily transmutable into animal Juices, than Vegetable, and therefore a vegetable Diet is more proper for some Constitutions, as being less nourishing; tho' some Vegetables, as Carrots and Turnips, are fattening to Animals who live only on Vegetables.

17. As the Qualities of Plants are more various than those of animal Substances, a Diet of some sorts of Vegetables may be more effectual in the Cure of some * chronical Distempers, than an animal Diet.

18. The fibrous or vascular Parts of Vegetables seem scarce changeable

* *That do not kill soon.*

in the alimentary Duct. The Dung of Horses is nothing but the Filaments of the Hay, and as such, combustible.

19. Vegetables abound more with aerial Particles, than animal Substances, and therefore are more flatulent.

20. Man is by his Frame as well as his Appetite a carnivorous Animal; the Instruments of Digestion are so well adapted to the proper Food of each Animal, that from the Structure of the First, it is easy to guess at the Second. Most Quadrupedes that live upon Herbs, have incisive Teeth to pluck and divide them: after they are swallow'd, they are brought up again from one Stomach to receive a new Alteration by a second Chewing; after that, the Mass so prepar'd passeth through four Stomachs of different Figures and Structure, before it comes into the Intestines. This is the Case of rumi-

ruminating Animals, except some few, as of Hares, who have but one Stomach, by which it appears, that Nature is at a great deal of Labour to transmute Vegetable into Animal Substances: Therefore Herb-eating Animals, which don't ruminate, have strong Grinders, and chew much. There have been several Instances of ruminating Men, and that Quality leaving them, was a Symptom of approaching Sicknes, Vid. *Philosoph. Transact.* & *Bonet. Sepulchret. Anatom.* Granivorous Birds have the Mechanism of a Mill, their Maw is the Happer which holds and softens the Grain, letting it drop by degrees into the Stomach, where it is ground by two strong Muscles, in which Action they are assisted by small Stones which they swallow for the Purpose; and because this Action of Grinding cannot be perform'd by the weaker Stomachs of their Young, many of them, as Pigeons, half digest

gest the Aliment before they give it to their Young. Some Birds that live upon Substances easily dissolvable, as Worms, Eggs, have the Coats of the Stomachs smooth, as Cuckows. Birds of Prey that live upon animal Substances, have membranaceous, not muscular Stomachs.

The best Instruments for dividing of Herbs are incisor Teeth; for cracking of hard Substances, as Bones and Nuts, Grinders, or Mill-Teeth; for dividing of Flesh, sharp-pointed or Dog-Teeth, which seem to be so necessary for that Purpose, that an Eagle has such Teeth not in his Bill, but two at the Root of his Tongue to hold his Prey, and three Rows in his Jaws at the Entry of his Gullet. A Human Creature has all the three sorts of Teeth; the Teeth and Stomachs of some carnivorous Beasts don't differ much from the Human. A Lion has generally fourteen in each Jaw; four Incisors, four Canine,

nine, and six Grinders. sharpish, for dividing of Flesh as well as cracking of Bones. A Human Creature has commonly sixteen Teeth in each Jaw, two of them only Canine. The inward Coat of a Lion's Stomach has stronger Folds than a Human, but in other things not much different. The Stomachs of Water-Fowl that live upon Fish are Human; therefore it seems that Nature has provided Human Creatures with Instruments to prepare and digest almost all sorts of alimentary Substances, as Herbs, Grain, Nuts; by the Structure of their Parts as well as Appetites, they are plainly carnivorous.

21. It has been objected against this Doctrine, that * Granivorous Animals have a long Colon and a Cæcum, which in Carnivorous are wanting. Now it is well known

* *That live upon Grains or Seeds.*

that a Man has both, Vid. *Philosophical Transactions*; to this it is answer'd, That the Observation is not true without Exceptions, many carnivorous Animals have neither Colon nor Cæcum, and many granivorous have both. There are Animals not carnivorous that have a large Cæcum, and no Colon, and others that have neither.

There are carnivorous Animals, I mean such as eat Flesh sometimes, that have both Colon and Cæcum; but as the Observation is generally true, it proves at least that Mankind is design'd to take vegetable Food sometimes, and it is a fresh Instance of Nature's being at more Labour to assimilate Vegetable into Animal Substances, by affording them a longer and more retarded Passage.

22. Carnivorous Animals have more Courage, muscular Strength, and Activity, in proportion to their Bulk; which is evident by comparing

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the

the Cat-kind, as Lions, Tigers; and likewise the Dog-kind with Herb-eating Animals of the same Bulk. Birds of Prey excel Granivorous in Strength and Courage. I know more than one Instance of irascible Passions being much subdu'd by a vegetable Diet.

23. Fermented Liquors are proper, and perhaps necessary for such as live upon an Animal Diet; for Flesh, without being qualify'd with Acids, as Bread, Vinegar, and fermented Liquors is too alkalescent a Diet; and Wine moderately taken, rather qualifies the Heat of Animal Food, than increaseth it. Water is the only Diluter, and the best Dissolvent of most of the Ingredients of our Aliment. It is found by Experience, that Water digesteth a full Meal sooner than any other Liquor; but as it relaxeth, the constant Use of it may hurt some Constitutions. As it contains no Acid, it is improper

per with a Diet that is intirely alkalifcent.

The Doctrine laid down in this *Essay*, is in moft Particulars (I do not fay in all) conform to that of the divine *Hippocrates*, as appears by feveral Paflages of his Works, particularly of his Books of Diet, of his Method of Diet in acute Dif-eafes, and *Galen's* Commentaries both upon thofe Books, and fome others of his Works. I fhall inftance in fome few Particulars, as far as relates to that Part of Diet call'd Aliment, without referring to the Editions, Books and Pages, which would be of fmall Ufe to my Readers. The Maxims of this great Man are, That Health depends chiefly upon the Choice of Aliment.

That the Phyficians before his Time were to be blam'd for not prefcribing Rules of Diet.

That he who would skilfully treat the Subject of Aliment, muft confi-

der the Nature of Man, the Nature of Aliments, and the Constitution of the Person who takes them.

In his Books of Diet, he describes the Qualities of all the Substances which Mankind generally feed upon.

As of all sorts of Flesh, many of which are not in Use amongst us; as of Dogs, Foxes, Asses, Horses.

That the Flesh of wild Animals is drier than that of Tame; of Stall-fed, than of those fed by Pasturage.

That the Flesh of Animals, in the Vigor of their Age, and of such as are castrated, is best.

That of Animals which have not us'd hard Labour, is tenderest.

That Beef is bilious, that is, alkallescent, as all Flesh Meat is.

That the Flesh of hot dry Countries is most nourishing.

He is very particular as to manner of Cookery, that Roasting destroys the Humidity. That

That salted Flesh should be macerated and moisten'd.

That salted Flesh dries, attenuates, and moves the Belly.

He is likewise very curious in tempering the Qualities of his Meats, by Seasonings of contrary Qualities.

He describes the Qualities of the Flesh of most sorts of Fowl; that the Flesh of granivorous Birds is not so moist and oily as that of Ducks; he is particular as to the Qualities of Fishes fresh and salted, and of all Vegetables both Alimentary and Medicinal; that Onions, Leeks, Radishes, &c. are hot and acrimonious; that some of them, as Mustard and Cresses, will occasion a * Dyfury; that others, as Lettuce, are cooling and relaxing; Celery, diuretick; Mint, hot; that the Cabbage kind resolve the Bile; that such Herbs as are odorous, are heating; Legumes are fla-

* *Difficulty of Urine.*

tulent; ripe Fruits, laxative; and unripe, astringent.

That unripe Cucumbers are hard of Digestion.

That the Fruits of the Earth in hot Countries are drier and hotter than in cold.

He is no less exact in describing the Qualities of Milk, Whey, all sorts of Bread and Water, which he chooses clear, light, without Taste or Smell, drawn not from Snow, but from Springs, with an Easterly Exposition; tho' he seems to have known something of Mineral Waters, he says nothing of the Use of them.

He is no less accurate in the Description of the Qualities of several sorts of Wines, Black, White, Austere, Oily, Thin, with the proper Uses of them, by which it appears that Wine was seldom or never drunk in his Country without Water. He allows Wine unmix'd after great Dissipations of the Spirits by Fatigue, and regulates

lates the Quantities of it according to the Seasons.

He likewise consider'd the Medicinal Qualities of Aliments, and tells you, that of Aliments some are laxative, some moisten, some dry, some bind, some move Urine.

Indeed the Qualities which he ascribes to alimentary Substances, are the four in common Use amongst the Ancients, as hot, cold, moist, and dry; according to those, his Notions are often very just and instructive, and nothing can be more so than what follows; That acid, acrid, austere and bitter Substances do not nourish, but by their Astringency create Horror, that is, stimulate the Fibres; that sweet, oily, and fat things are nourishing and anodyne; that Water dilutes and cools; that Honey is cleansing; and Vinegar profitable to bilious Constitutions: No less judicious are his Intentions in the Cure of Diseases by Aliment.

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That

That Diseases depend on the Parts contain'd, and the Parts containing, that is, on the Fluids and Solids.

That the solid Parts were to be relax'd or astricted as they let the Humours pass, either in too small or too great Quantities.

That Animals consist of Fire and Water, which Division is not so uncompleat as one may imagine; for by Water he seems to understand the unactive, and even the solid Parts; and by Fire all the volatile and active Parts, and that the Difference of Constitutions, consists in the Excess or Defect of these Principles; and he compares the due Mixture of them to a Sort of Harmony.

That there are in a Human Body, Bitter, Salt, Sweet, Acrid, and Insipid.

That Contraries are the Remedies of their Contraries.

That Health consists in a due Proportion of Blood, Pituite, and Gall.

That

That Redundance of Blood and Gall are the Causes of acute Distempers.

That long Abstinence occasions Bitterness in the Mouth, and beating of the Temples; and he finds fault with the Physicians that starv'd their Patients in the beginning of a Distemper, and gives a Reason for it conformable to the Principles laid down in this *Essay*, That it dry'd too much, that is, the liquid Parts were dissipated.

That a Man cannot be healthy and digest his Aliment without Labour, and that the Quantity and Kind of Diet must bear a due Proportion to the Labour. His Commentator *Galen* lays down this Aphorism.

Young, hot, strong, and labouring Men may feed on Meats giving both a hard and gross Juice (as Beef, Bacon, powdered Flesh and Fish, hard Cheese, Rye-Bread, and
hard

hard Eggs, &c.) which may nourish slowly, and be concocted by Degrees; for if they should eat things of light Nourishment, either their Meat would be too soon digested, or else converted into Choler.

And again, Milk is fittest for young Children, tender Flesh Meat for them that are growing, and liquid Meats for such as have acute Diseases.

Hippocrates observes, that Paleness is the Effect of Acidity.

That the Choice of Diet should be according to the Difference of Constitutions; as in phlegmatick Constitutions, Fish and Flesh well season'd: The Flesh of Fowls (which is an alkalescent Diet) not many Vegetables, black austere Wines. In dry Temperaments, lenitive Fruits, Figs, Raisins, and soft Wines. In such as have a bad Digestion, and moist Bellies (the Case of acid Constitutions)

stitutions) the Flesh of Fowl, which is a Diet both alkalescent and of easy Digestion; for such as have dry Bellies, Pot-Herbs.

Galen his Commentator tells you, That bitter Substances engender Choler and burn the Blood, giving no general Nourishment to the whole; howsoever they may be acceptable to some one Part, that is (according to what was said in this *Essay*) that they are a sort of subsidiary Gall: And again, sharp Spices are most unfit for tender Bodies, whose Substance is easily melted and inflam'd: However, strong Men may eat them with gross Meats, and consequently by the Principles of the *Essay*, Spices, by their melting Quality, are proper for fat People: Meats over-salted are dangerous; Inflammations, Leprosies, Sharpness of Urine, and great Obstructions happening to such as use them much, agreeing with none but strong Bodies, as Sailors, Soldiers,

diers, and Husband-men, accusom'd to hard Labour, and much Toiling.

Fat Meats are not good but for dry Stomachs; for in sanguine and cholerick Stomachs, they are soon corrupted; in phlegmatick Stomachs, they procure Looseness, and hinder Retention.

That when any Man is sick or distemper'd, his Meats should be of contrary Qualities to his Disease; for Health itself is but a kind of Temper gotten and preserv'd by a convenient Mixture of Contrarieties. Accordingly, in Fevers the Aliments prescrib'd by *Hippocrates*, were Ptisans and Cream of Barley, Decoctions of some Vegetables likewise with the Mixture of some Acid, Hydromel, that is, Honey and Water, Oxymel, Honey and Vinegar, thin Wines without Flavour, diluted with Water, when there was no Tendency to a *Delirium*. Water, Vinegar, and Honey in Pleurifies and Inflammations
of

of the Lungs; in which Cases sometimes he mixeth Spices, which seem odd, but that must have been for promoting Expectoration; and even in Ulcers of the Lungs, he prescribes Fat and Salt for the same Purpose; and to Women troubled with Pains after Child-bearing, he mixeth his Ptisan with Leeks and Fat; which Practice no doubt he had found successful.

He prescribes great Quantities of Asses Milk, as far as an *English* Gallon in proper Cases, especially as a Restorative; and to such as had hot, dry Constitutions, Asses Milk, Whey, and Abstinence from Fat and Oil.

No less judicious are his general Maxims for preserving of Health.

A Diet moderate in Quantity, with a due Degree of Exercise.

That such as are of hot Constitutions should abstain from violent Exercises, use Bathing in hot Water, rather than Unctions, feed upon Mays (which is his favourite Food) and Pot-Herbs.

That

That one must not accustom one's self to a too regular Diet, because the least Error is dangerous.

That all sudden Alterations in Extremes, either of Repletion, Evacuation, Heat, or Cold, are dangerous.

Galen, speaking the Mind of *Hippocrates*, tells us, That the whole Constitution of Body may be chang'd by Diet.

That we should take those kinds of Meats which are best for our own particular Bodies, for our particular Age, Temperature, Distemperature, and Complexions; for as every particular Member of the Body is nourish'd with a several qualify'd Juice, so Labourers, and idle Persons, Children and Striplings, old Men and young Men, cold and hot Bodies, phlegmatick and choleric Complexions, must have diverse Diets. It would be easy to produce a great many more Instances to prove the Conformity of the Doctrine of the
Essay,

Essay, with the Notions and Practice of *Hippocrates*; but those already mention'd are sufficient, and may be of use to some Readers to confirm by Authority, what they will not be at the Trouble to deduce by Reasoning.



The first thing that I observed
 when I stepped out of the
 carriage was a cold wind
 blowing from the north.
 The snow was deep and
 the trees were bare.
 I had never seen such a
 winter before. The
 ground was covered in
 a soft white blanket.
 The sky was a pale
 blue-grey. The
 air was crisp and
 clean. I felt a sense
 of peace and
 tranquility. The
 world seemed to
 have been
 washed clean.
 I took a deep
 breath and
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PRACTICAL RULES

O F

D I E T

In the various

Constitutions *and* Diseases

O F

HUMAN BODIES.

By JOHN ARBUTHNOT, M. D.

Fellow of the *College of Physicians*, and of the
Royal Society.



L O N D O N:

Printed for J. and R. T O N S O N in the *Strand*.

M D C C X X X V I.



THE
P R E F A C E.

THE former Part of this Treatise has been censur'd for two Faults; first for being obscure; secondly, for not being so practical as it ought to be: As to the First, I answer, That Obscurity may be taken in two Senses, as Real, or as Relative to the Understanding of the Reader; if Obscurity is taken in the first Sense, I will venture to affirm, That it is unjustly blam'd upon that Account: Perhaps it may not be all true, but I am sure it is intelligible. If Obscurity is taken in the second Sense, Euclid's Elements may be said to be obscure: I freely own that I had made too partial a Judgment of the Capacity of several of my Readers; and yet it is true, That many, not bred up in the Profession of Physick, understood the Whole; many, a great Part of it;

R 2 and

The P R E F A C E.

and it was not possible to write it down to the Capacity of every Body.

The second Fault, of its not being sufficiently practical, I have endeavour'd to repair, by the Addition of this Second Part, which I was oblig'd to write in haste, when the Distress both of my Mind and Body, besides Business, render'd me very unfit for such an Undertaking: All I can say for it is, That tho' it be less accurate, it may perhaps be more useful than the first, it being much such a Work as an Almanack, of publick Benefit, but from which no body I believe ever propos'd any Reputation. It is a Collection of the scattered Precepts of the First Part, and other new Rules, extended to the most common Diseases as well as Constitutions of Human Bodies. I have still follow'd the Method of the learned and industrious Boerhaave, who has certainly studied and taught this Part of the Profession more than any that ever were before him.

I cannot think it trifling nor unnecessary to treat this Dietetick Part of Medicine by it self with some Accuracy, for the following Reasons: First, Because the Parts of any Art or Science are often best understood when they are treated separately: Secondly, Because the Practitioners in Physick and Chirurgery are often frustrated in their Intentions by Errors in Diet committed

The P R E F A C E.

mitted by their Patients, a Misfortune that I myself have felt several times, and, as I suppose, in common with others of the Profession. Thirdly, Because some practical Rules of this sort may be useful to such as are remote from good Advice; and likewise to some coarse Practitioners which they are obliged to make use of: By the Methods prescrib'd in this short Treatise, which are almost within the Reach of every Body, more Good and less Mischief will be done in acute Distempers, than by Medicines improperly and unseasonably administred; and great Cures may be effected in Chronical Distempers, by a proper Regimen of the Diet. I hope I have done with this Subject. I was drawn in to write the First Part by Accident, and to write the Second by some Defects in the First; these are the cumbersome Perquisites of Authors.





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PRACTICAL



PRACTICAL RULES

OF

D I E T

In the various

CONSTITUTIONS and DISEASES of
HUMAN BODIES.

CHAP. I.

Of the different Qualities and Effects
of ALIMENTARY SUBSTANCES.

1. *Alimentary Substances, austere and
astringent.*



AUSTERE, *astringent, ve-
getable Substances*, are such
as contain an acid essential
Salt, combin'd with Earth,
and very little Oil; as,

Several

Several sorts of *Plumbs*, and some sorts of *Pears*, distinguishable by their rough styptick Taste.

Quinces, which by their Quality are often useful to weak Stomachs, and in stopping of Fluxes of Blood.

Pomegranates, which contain a Juice styptick, and extremely cooling.

Barberries, *Medlars*, *Cornelian Cherries*, all beneficial in Bloody-Fluxes.

Sorrel, useful in Spitting of Blood, and Stinking Breath.

Purslain, succulent, subacid, with a cooling nitrous Salt.

Burnet, astringent, with a gentle spicy Quality, vulnerary.

Tamarinds, cooling, astringent, yet laxative to the lower Belly.

Capers, astringent and diuretick.

All *Pickles*, especially *Samphire*, which is stimulating. Such sort of Substances by their Acidity and astringent Quality offend some Stomachs.

There

There are *Wines* of the same Quality, known by their rough austere Taste; as likewise all acidulated and chalybeate *Waters*.

Strong Waters or *Spirituos Liguors* contract and harden the solid Parts most of all.

2. *Alimentary Substances softening and relaxing.*

The Juices of most sorts of ripe Garden Fruits, as *Cherries*, are cooling, and laxative to the Bowels; their Kernels are good for the Gravel in the Kidneys.

Strawberries, which by their fragrant Smell seem likewise to be cordial. The Seeds, which are obtain'd by shaking the ripe Fruit in Water, are an excellent Remedy against the Stone: The Juice of *Strawberries* and *Limons* in *Spring-Water* is an excellent Drink in bilious Fevers.

Oranges,

Oranges, those that are sweet are more relaxing than the bitter or *Seville* Oranges, which nevertheless are not heating; these are an excellent Remedy against the hot Scurvy.

Citrons and *Lemons*, their Juices more cooling than that of Oranges. Sour *Lemons* do not possess this relaxing Quality very much, they being somewhat styptick.

Apples, which are likewise pectoral, cooling, and lenitive; they differ considerably as to the Kinds of them, and their Qualities may be easily known by their Taste.

Pears have most of the same Qualities; some Kinds by their high Flavour seem to be more cordial than Apples.

Peaches, which are likewise cordial and pectoral.

Sweet *Plumbs*, those of the austere Kind are astringent.

Mulberries, pectoral, corrective of the bilious Alkali.

Apricocks,

Apricocks, unless mellow, are rather somewhat styptick.

Gooseberries, extremely ripe, are lenient; unripe, they are sour, and rather astringent.

Currants are good in Spitting of Blood, extremely cooling, and somewhat astringent. The Jelly or Rob of Currants, mix'd with Water, is a most excellent Drink in bilious Fevers.

Grapes taken in moderate Quantities help the Appetite and Digestion; in great Quantities, they resolve the Bile too much, and produce Fluxes; dry'd, they are pectoral.

Figs are great Subduers of Acrimony, useful in Hoarseness and Coughs, extremely emollient, and by relaxing the Urinary Passages, diuretick, useful in bloody Urine; it has been always believed that the immoderate use of them generates Lice.

Plants of the low pomiferous Kind, as *Melons, Pompions, Gourds, Cucumbers*, contain a cooling Juice, with a nitrous Salt; that of *Melons* and the *Ananas* is rich and cordial; they are diuretick; and there are Instances, when eaten in great Quantities, they have produced bloody Urine; they ought to be taken fasting. The Juice of *Cucumbers* is too cold for some Stomachs, and ought not to be taken by such as have thin and poor Blood; if the Stem upon which they grow be bruised, the Pulp of the Fruit grows bitter, and has the Effect of *Coloquintids*. The Juice of an unripe *Cucumber* is purgative. *Cucumbers* are useful in bloody Urine.

All Fruits which contain a sub-acid essential Salt, much Phlegm, and a small Quantity of Oil, have this lenient Quality; as likewise the emollient Pot-Herbs; as,

Cole,

Cole, Cabbage, Coleworts, which are soft and demulcent, without any Acidity. The Jelly or Juice of red Cabbage, bak'd in an Oven, and mix'd with Honey, is an excellent Pectoral.

Lettuce, which has a milky Juice, with an anodyne or opiate Quality, resolvent of the Bile, proper for melancholy People, diuretick, and good in Stranguries, especially when eat raw; it is reckoned to increase Milk.

Cichory and *Dandelion* have some of the same Qualities, with a small degree of Bitterness extremely agreeable to the Stomach, and not heating. The Juice of the Dandelion is a Remedy in intermitting Fevers.

Spinage, emollient, but not very nourishing; it is reckoned good in Inflammations of the Bowels.

Beets, emollient, nutritive, and relaxing.

Carrots, good in nephritical Cases, antiacid, and fattening.

Parsnips,

Parsnips, useful in phlegmatick Colicks; the Plant from which Apoponax is taken, is a sort of Parsnip.

Skirrets, useful in bloody Urine, and Spitting of Blood.

Scorzonera, demulcent in the Small-Pox, Meazles, and pestilential Fevers, and for Gouty People; the express'd Juice better than the Decoction.

Goats-beard, an alimentary Root, has most of the Qualities of Scorzonera.

Emollient likewise are all farinaceous or mealy Substances.

Barley, which is deterging, tho' viscous in a small degree; the Decoction and Cream of Barley are proper in inflammatory Distempers.

Rice, nourishing, good in Hæmorrhages, or Fluxes of Blood.

Mays is not so easily brought to Fermentation as other Grains, therefore more viscous.

Wheat,

Wheat, the properest of any Grain for Bread, which, when not intirely purged from the Bran, is laxative, and stimulating to the Bowels.

Rice, the Bread, more acescent and less nourishing than that of *Wheat*.

Oats, cleansing, resolving, and pectoral; Oatmeal and Butter outwardly apply'd dry the Scab on the Head.

Millet, diuretick, cleansing, and good in Diseases of the Kidneys.

Panick, aperient, boil'd with Milk, demulcent, temperating Acrimony.

Pease contain a soft Oil, without any spicy Quality; therefore are extremely demulcent, and temper Acrimony.

Beans and *Kidney-Beans* have the same Qualities; they are reckoned diuretick, and good for the Stone.

It has been commonly reckoned, because of the Viscosity of *Pease* and *Beans*, that People who live a se-

S

dentary

dentary Life should not feed much upon them.

The *Animal Oils, Cream, Butter,* and *Marrow,* are all lenient and nourishing : *Marrow* is excellent in the dry *Scurvy* with crackling of the *Bones,* where it performs its natural Office.

Of all Drinks, *Whey* is the most relaxing, so are warm *Water* and *Decoctions* of mealy Substances, and *Panadas,* or Bread boil'd in *Water.*

3. *Diluting Substances.*

Water and *watery Liquors,* without any saline Substance ; *Decoctions* of *mealy Substances ;* *Robs* and *Gellies* of *Garden Fruits* in *Water.*

Resolving is bringing a Fluid which is new concreted into the State of Fluidity again. Such are

All Substances which are saponaceous, or contain Salt and Oil ; therefore most ripe *Garden Fruits* have
have

have this Quality, and *Honey* most of all vegetable Substances. Mere diluting dissolves and carries off Salts.

4. *Anti-acid, or contrary to Acidity or Sourness, are,*

All *Animal Diet* in general, because no Animal has any acid Salt in it, especially *Flesh* roasted; tho' not so easy of Digestion as boil'd.

The *Animals* which feed on other Animals must have this Quality stronger than those who feed on acid Vegetables; such are most Fishes, all Birds which feed upon Worms and Insects, several Kinds of Water-Fowl, Woodcocks, Snipes, and several Kinds of small Birds, which for that Reason afford a higher Aliment than those that feed upon Grains or other Vegetables.

The *Flesh* of *Animals* differs according as they are terrestrial, aquatick, or amphibious. Fishes contain much

Oil, and amphibious Animals participate somewhat of the Nature of Fishes, and are oily; and the same Species of Animals differs according to the Soil and Air it lives in, and the Nourishment which it takes, as those in Marshes and Mountains; the Flesh of Oxen, Sheep, Deer, in different Pasturage; and this is in none more sensible than in Hogs Flesh.

Young Animals from their Age and the Nature of their Aliment have more tender Fibres, and more superfluous Humidity than old Animals, which have their Fibres tougher, and the Juices more exalted and relishing.

Mutton by Experiment is the most perspirable of all animal Food, and Hogs Flesh and Oysters the least.

The *Flesh* of *Animals* which take and digest a great Quantity of Food, and consequently use strong Exercise, must be nourishing, because they have strong Sanguification, such are
Pigeons;

Pigeons; and the same is true of some Fishes.

The Nature of most sort of animal Diet may be discovered by Taste and other sensible Qualities, and some of those general Rules above-mention'd, without particular Disquisitions upon every Kind.

Eggs are perhaps the highest, most nourishing and exalted of all animal Food, and most indigestible, because no body can take and digest the same Quantity of them as of other Food.

Shell-Fish are nourishing, and their Oil is corrected by their Salts, which make it pungent and stimulating.

But, as was said before, all Animal Diet is anti-acid or alkalescent.

Vegetables used in Aliment anti-acid are such as of themselves turn foetid or stinking, rather than sour.

All the *Cole* or *Cabbage* Kind.

Asparagus diuretick or aperient; by the foetid Smell which it gives

the Urine it is suspected to be hurtful to the Kidneys.

Parsley and *Celery*, both contain a pungent Salt and Oil, diuretick and aperient, bad in Bloody-Fluxes.

Garlick, *Rockambole*, *Onions*, *Shalot*, *Leeks*, these abound with a pungent volatile Salt and Oil, are extremely diuretick, and, when stimulating Diureticks may be safely us'd, are very effectual: *Garlick* has been found by Experience to be a very excellent Remedy in Jaundices and Dropsies, and in Asthmas proceeding from a cold viscous Phlegm. All these Plants are hurtful in Cases where the Blood is too much dissolv'd, in Spitting of Blood, and bloody Urine.

Cresses, *Radishes*, *Horse-Radishes*, *Mustard*, abound likewise in their several degrees with a pungent Salt, and as they subdue Acidity, are very improper where the Blood verges to the contrary State of a putrescent Alkali; and in general they are fitter
for

for old People, and cold Constitutions, than the young and sanguine. Mustard is a very powerful Remedy in viscous cold phlegmatick Cases.

Dilse, a Sea-Plant, antiscorbutick. There are other Sea-Plants us'd as Aliment, which contain a temperate Sea-Salt, very useful in Scurvies; as Laver, which is the *Lactuca Marina*, or Sea-Lettuce, and Sea-Cole, or Cale.

Carrots, *Turnips*, *Parsnips*, are Anti-acids of a milder Kind.

Nettles, good against Hæmorrhages.

Such as abound with a soft Oil, which operate by blunting the Acrimony of the Salts, as most sorts of *Nuts*; most of which are hard of Digestion, yet possess some good medicinal Qualities.

Walnuts are cordial, anti-hysterick, and gently sudorifick.

Hazle-Nuts, good against Spitting of Blood.

Chestnuts are good in Female Weaknesses, and afford a very good Nourishment.

Almonds, pectoral.

Pistachos, nourishing and stimulating.

Olives are anti-acid by their Oil, but all oily Substances beget an Acrimony of another sort.

Truffles, which have an exalted Oil, and a volatile Salt of a grateful Savour, are heating.

Morelles have some of the same Qualities; and so have *Earth-Nuts* and *Potatoes*, which are very nourishing.

Mushrooms, which contain an Oil of a volatile Salt; therefore they are best corrected by Vinegar; some of them being poisonous, make the rest suspicious; the poisonous Kinds operate by a sort of Suffocation, in which the best Remedy is Wine or Vinegar and Salt, and Vomiting as soon as possible.

Acidity

Acidity is likewise cured by diluting, therefore *Water* is an Anti-acid.

5. *Acid Substances are,*

Most ripe Garden Fruits, fermented Liquors, small Wines, with little Oil, and much Tartar, Vinegar, sour Milk, Butter-Milk. Several Plants known by their Taste, as Sorrel, &c. Those of the mealy Kind are acescent, that is, being kept they turn sour rather than corrupted and stinking.

6. *Those things which resolve glutinous and fat Substances, are*

Spices, as Cinnamon, Mace, Nutmeg, Cloves, Ginger, Pepper. These abounding with a high exalted Oil, and volatile Salt, by which Principles they are heating, and act strongly both on the Fluids and Solids; Ginger is perhaps one of the best of them.

them. All Spices are bad for melancholy People.

Of the same nature are the *Vegetables* used in Seasoning, as Thyme, Savory, Marjoram, Rosemary, Mint, Orange and Limon-Peel, Fennel, which contains a subtile Spice, balsamick, warm, and stimulating; Chervil, of the same nature; they are good in phlegmatick cold Constitutions: Sage is stimulating, drying, astringent; us'd in great Quantities it will produce Temulency, or Drunkenness.

All *Soaps* and *Soapy Substances*, and consequently ripe Fruits, the Juices of pungent and aromatical Plants, all those Substances resolve Solids, and sometimes attenuate or thin the Fluids.

7. *Stimulating.*

All *Salts* in general, both acid and alkaline; all acrimonious *Oils*, and
all

all Substances that abound with them, for by their Oil they obstruct the Extremities of the small Vessels, and by their Salts they irritate the Solids, consequently all the Substances mentioned in the foregoing Article are stimulating, and all fermented *Spirits*, the Effect of which is very sudden.

Extreme *Cold* stimulates, producing first a Rigor and then a glowing Heat; those things which stimulate in the extreme Degree, excite Pain.

8. *Incrassating or Thickeners of the Humours, are*

All things which expel the liquid Parts strongly, so as to thicken what remains. Therefore violent Exercise or Labour produceth this Effect; the Blood of labouring People is more dense than that of the sedentary. A due Consistence of the Blood is very necessary for Health, and this is acquir'd chiefly by Exercise; all things

things which provoke great Secretions, especially Sweat, produce this Effect at last.

9. *What renders the Blood acrimonious
or sharp,*

Are such things as increase its Velocity; for by mutual Attrition Salts are produc'd.

Whatever attenuates the Humours.

Whatever resolves Concretions, and turns them fluid; for whatever putrifies, is acrid.

Acrimony is threefold: *Acid*, which is produc'd from Vegetables lying long in the Stomach; no animal Substance produceth Acidity, except Milk.

Great Quantities of *Oily Substances*, for *Animal Humours*, by Heat, stink and grow foetid, like Oil.

Express'd Oils are mild.

Distill'd Oils turn acrid.

Oils intirely deprav'd of their Salts are not acrid.

Alkaline Acrimony is produced by fix'd Salts, by fix'd Alkalis, and volatile Alkalis, taken in great Quantities; and by essential Salts of Vegetables, of which sort are Sugar, Manna, and Honey.

Alkaline Acrimony is produc'd by all Vegetables which abound with a pungent volatile Salt and Oil, as Mustard, Garlick, Onions, Horse-Radish, Cresses; and by all Spices. All things which create Pain, render the Humours sharp.

10. *Abaters of Acrimony or Sharpness.*

Expres'd Oils of ripe *Vegetables*, and all Preparations of such, as of Almonds, Pistachos, and other Nuts.

Emulsion of the Seeds of Barley, Oats, &c.

Decoctions of farinaceous *Legumes*, as Pease, Beans, &c.

Native

Native Animal Oils, as Fat, Cream, Butter, Marrow, especially the last, which is excellent in some Scurvies.

All insipid inodorous *Vegetables* are demulcent.

Fellies, *Broths* of Animal Substances not high seasoned, acid Substances in respect of alkaline, and alkaline in respect of acid.

Fermented burning *Spirits* subdue Acidity, and are very often a present Remedy when the Stomach is affected with it. Spirit of Wine dulcifies Spirit of Salt, Nitre, or Vitriol; but then those Spirits have other bad Effects.

Absorbents, as Chalk, Crabs Eyes; but these are not alimentary, except calcin'd Hartshorn, which has something of this Quality.

Nothing abates Acrimony of the Blood more than an equable Motion of it, neither too swift nor too slow; for too quick a Motion produceth an alkaline, and too slow an acid Acrimony.

11. *Coagulators of the Humours.*

Those things which expel the most fluid Parts, as in the Case of incrasating, or thickening; and by those things which suck up some of the fluid Parts, as Absorbents.

All *Vegetables*, which make a black or purple Tincture with the Vitriol of *Mars*, such as Galls do. Juices of unripe Vegetables, and the Juices of all austere Vegetables which coagulate the Spittle, and being mix'd with the Blood in the Veins would produce Polypus's in the Heart, and Death.

All burning fermented *Spirits* have this Quality in a strong degree.

12. *Those things which accelerate the Motion of the Blood, are*

All stimulating, diluting, and attenuating Substances; what relaxeth the Veins, as Frictions, Bathings,
Com-

Compressions by Ligatures often remov'd, Sneezing, Coughing, Laughing, and several other natural Motions.

Those things which take off the Causes of Acceleration, retard the Motion of the Blood.

13. Those things which increase Milk.

What generates quickly a great Quantity of Chyle, as thin Broths, Ptisanes of Barley or Oatmeal, Panadas, but nothing more than Milk with Salt and Sugar; Cream, if the Milk be not too thick, Malt Drink, not strong, or stale; a due degree of Exercise or Labour. Eating much Flesh-Meat abates Milk.

14. Substances expectorating.

Such as cleanse and open, as mild vegetable Oils, such as that of Almonds or Olives; soapy Substances, especially

especially Honey; Emulsions of farinaceous Substances, Decoctions of emollient Vegetables, Sugar.

Sometimes stimulating Substances are necessary to dissolve viscid Phlegm, and excite a Cough.

The mild Vapour of warm Liquids, especially warm Water.

And such things as are endued with an opiate Quality by incrassating the Phlegm.

15. Lenitive or laxative of the Belly.

Animal Oils, fresh Butter, Cream, Marrow, Fat Broths, especially of those Parts which are about the Mesentery; Livers of Animals, because of the Bile which they contain; the express'd Oils of mild Vegetables, as Olives, Almonds, Pistachos, and the Fruits themselves; all oily and mild Fruits, as Figs; Decoctions of mealy Vegetables, these lubricate the Intestines; some saponaceous Substances

T

which

which stimulate gently, as Honey, Hydromel, or boil'd Honey and Water, and even Sugar itself, especially unrefin'd.

Such *lenitive* Substances are proper for dry atrabilarian Constitutions, who are subject to Astriction of the Belly, and the Piles, and will operate when stronger medicinal Substances are sometimes ineffectual; but such lenitive Diet hurts those whose Bowels are weak and lax.

Lenitive are likewise watery Substances; and even common Water or Whey, drank in cool Air, and walking after it; sour Milk and Butter-Milks have the same Effect.

There are other Substances which stimulate more, even new Milk, especially Asses Milk, when it sours on the Stomach; and Whey, turn'd sour, will purge strongly.

Jellies made of the solid Parts of Animals contain a sort of ammoniacal Salt; Shell-Fish, as Oysters, the same, by which they are lenitive;
most

most Garden Fruits, by the Salts which they contain, produce the same Effect; some of them, as Grapes, will throw such as take them immoderately, into a *Cholera Morbus*, or incurable Diarrhœas; all Fruits when they have this Effect, are flatulent; Wine and spirituous Liquors are not so useful in such a windy Colick, as Water, which is much the best Remedy after a Surfeit of Fruit. The express'd Juices of several Vegetables, because of their essential Salts, stimulate the Bowels.

All fossil Salts, as Sea-Salt, Rock-Salt, &c. have this Quality; a Diet of salted Flesh throws Ships Crews sometimes into Diarrhœas.

16. *Diuretick.*

All *Decoctions, Emulsions, Oils* of emollient Vegetables, such relax and lubricate the Urinary Passages; they ought to be taken in an empty

Stomach, an open Air, and with gentle Exercise.

*Diluent*s, as Water, Whey, Tea, small Ale without Hops.

Substances stimulating, by which Quality all Salts whatsoever are diuretick.

Soaps which resolve solid Substances, any Salt, Oil, Salads of pungent Herbs, with Oil of Olives, and Vinegar, are diuretick.

By this saline Quality, the Juices of Shell-Fish, of Oysters, Muscles, Crabs, Crawfish, and the Soups made of them, are diuretick.

Vegetables which have little Oil, and a great Quantity of essential Salt, are diuretick, Parsley, Celery, Sorrel, Chervil, Eringo.

Vegetables which are aromatick and balsamick, Saffron, Asparagus, Nutmeg; these affecting the Urine with an Odour, have some specifick Quality of this Kind.

All

All *anodyne* Substances which take off Spasms and Contractions of the membranous Parts, and all which subdue any particular Acrimony, are diuretick.

For provoking of Urine, one should begin with the gentlest at first, as the lenient, relaxing, diluent, demulcent, and last of all the stimulating.

The Blood may be cleans'd, and the Salts of it carried off perhaps better by Urine than any other Secretion,

17. *Sudorificks.*

Such things as relax the Vessels of the Skin, by which Quality many things which are diuretick, are likewise sudorifick; warm Water and Honey, Barley-water, Friction, and tepid Vapours, apply'd to the Skin, operate by this Quality.

Substances anodyne, by abating Spasms, relax, and by that Quality prove sudorifick.

Such things as dissolve and dilute the Blood, thus cold Water.

Water, Vinegar, and Honey, is a most excellent Sudorifick us'd by *Hippocrates*; it is more effectual with a little Mace added to it.

Those things which determine the Motion of the Fluids towards the extreme Parts, increase the Strength and Frequency of the Pulse, as violent Exercise, all Cordials, Spices, thin and sharp Wines, Juices of Limon, operate by these Qualities.

The Matter of Sweat is the most spirituous and nutritious Part of the Blood, nor is it to be forced without apparent Indications. It contains the same lixivial Salts with Urine.

Sweating often thickens the Blood, and sometimes thins and dissolves it.

Sudorificks are to be varied according to the Cause of the Disease which it is design'd to remove.

18. *Diaphoreticks or Promoters of Perspiration.*

What helps the Organs of Digestion, because the Attenuation of the Aliment makes it perspirable.

Such things as constrict the Fibres, and strengthen the solid Parts; Exercise to a degree less than what provokes Sweat.

Substances which stimulate in a small degree.

Air, moderately warm.

There are likewise Aliments more and less perspirable. See Sanctorius,

19. *Emenagogues.*

Such as produce a Plethora or Fullness of the Vessels, consequently such as strengthen the Organs of Digestion,

gestion, so as to make good Blood, especially Exercise; such as carry off the Fœces and Mucus, deobstruct the Mouths of the Lacteals, so as the Chyle may have a free Passage into the Blood.

Substances saline or soapy, that is, consisting of Salt and Oil.

Such as relax, and take off the Resistance of the Vessels of the Womb, Fomentations, and tepid Bathings of the lower Parts of the Body.

What accelerates the Reflux of the Blood from the lower Parts to the Heart, Friction, Walking, especially Dancing.

What stimulates and promotes the Excretion of the Blood, especially some of the Plants which abound with a pungent Salt, and a high exalted Oil, as those us'd in seasoning Aliment, Savory, Thyme, Marjoram, Penny-Royal, &c. Vapours acrimonious.

20. Heat is produc'd in animal Bodies

By the Application of hot things.

By increasing of Attrition or Rubbing of the Fluids and Solids, to which Heat is proportional.

Therefore whatever increaseth the Velocity of the Blood, by stimulating, heateth, as spirituous fermented Liquors; and when the Heat is increas'd, the Velocity of the Blood is certainly increas'd.

What increaseth the Density of the Fluids, heateth, for a denser Fluid is hotter than a rarer; and thus it is that Cold itself at last heateth.

Whatever straitens the Vessels so as the Channels become more narrow, must heat, because in that case the Attrition is made greater; therefore strait Clothes, thick Coverings, heavy and cold Air, but especially cold Baths, heat: All who are subject to Hæmorrhages ought to avoid these things.

things. In Consumptions and Atrophy the Liquids are exhausted, and the Sides of the Canals collapse, therefore the Attrition is increas'd, and consequently the Heat.

21. *Cold is produc'd in animal Bodies*

By Causes contrary to the former, *viz.*

By whatsoever diminisheth the projectile Motion of the Blood, by weakening the Force of any Stimulus; therefore diluting things are cooling, as Whey, Water, Milk and Water, both as they abate Acrimony, and relax the Vessels.

What is contrary to any particular Acrimony, is cooling, as alkaline Substances in respect to acid, and acid Substances in respect of alkaline; and soapy Substances, if the Heat proceeds from an oily or viscous Cause.

What expels any Stimulus out of the Body, cools.

Those

Those things which attenuate and dilute by diminishing the Density of the Fluid; thus Nitres, and those Vegetables, which have nitrous Salts in them, cool.

Tepid Baths cool by relaxing the Vessels; and Air, when it is light, is more cooling, *cæteris paribus*, than when it is heavy, because it compresseth the Vessels less.

All those who have lax Fibres and Vessels are naturally cooler than those that have strait.

22. *Cephalick.*

Such things as attenuate the Fluids which circulate through the capillary Vessels of the Brain, and abound with a volatile Oil, Salt, and Spirit, and are known commonly by a grateful Flavour and Odour, as Marjoram, Balm, Sage, Rosemary.

Those things which affect the Nose with a grateful Smell, and are not
hot,

hot, by their Odour promote the Separation of the animal Spirits.

23. *Cordial*

Are all such things as increase and facilitate the animal or natural Motions, the Power of moving the Muscles, or circulating the Fluids.

What increaseth the Strength of the Heart, is not always a Cordial; for in inflammatory Distempers, by increasing the projectile Motion of the Blood, the Strength may be diminished.

What increaseth the Force of the Heart so as to give a due degree of projectile Motion to the Blood, is a Cordial.

What produceth a due Quantity of animal Spirits, necessarily facilitates the animal and natural Motions.

Such are all Aliments which put the nutritious Juices in such a State
of

of Tenuity and Heat as approacheth to the White of an Egg, while it is hatching; those are commonly Meats and Drinks of easy Digestion, nourishing, of a Flavour grateful to most Palates.

Such as determine and settle the irregular Motions of the animal Spirits; therefore anodyne Substances, and what abate Spasms and Convulsions, are Cordial.

Such as stimulate and excite the Spirits, as Spices and Vegetables, which abound with a volatile Salt, Oil, and Spirit.

In short, whatever relaxeth the too strict Vessels, or straitens the too lax; what thickens the too thin, or attenuates the too thick Fluids, is a Cordial.

24. Carminative, or Expellers of Wind.

Wind is elastick and rarify'd, pent up in some Vessel of the Body, which

which by its Expansion creates a Tension or Convulsion in that Part.

Every thing which takes off that Convulsion, is, properly speaking, carminative.

Therefore what relaxeth or openeth so as the elastick Air may escape, as warm Water drank plentifully, Bathing, Fomentations, and all things which abate Pain, and those things which abound with volatile oily Salts, are carminative.

As those Spasms are often occasion'd by some acrimonious Substance which constringeth the Fibres of the affected Part; whatever is contrary to that particular Acrimony, is carminative.

25. *Anthelmintick, or contrary to
Worms.*

All things which are known by Experience to kill them, as Oils of all Kinds; Honey taken upon an
empty

empty Stomach, or after some gentle purging Medicine.

Substances which by their small pungent and sharp Particles kill them without hurting the Intestines, as all Fish-Bones and Hartshorn powder'd.

Those things which purge and expel them out of the Body, of which kind there are several alimentary Substances.

26. *Anodyne, or Abaters of Pain of the Alimentary Kind.*

Such things as relax the Tension of the affected nervous Fibres, as Decoctions of emollient Substances; those things which attenuate and remove the Obstruction, or destroy the particular Acrimony which occasions the Pain, or what deadens the Sensation of the Brain by procuring Sleep; some Alimentary Substances are endued with this Quality, as Saffron,
Let-

Lettuce, Cichory, Wine, and inflammable Spirits.

This being a sort of a compendious Alimentary Dispensatory, makes it unnecessary in the following Rules to repeat constantly the same things, it being sufficient to mention the Intention or Design to be pursued in the Diet.

When there are Contra-indications, that is, when different Symptoms demand opposite Methods one must adapt the Method to the most urgent Symptom.

When the Disease is complicated with other Diseases, one must consider that which is most dangerous. These may serve for general Rules.

C H A P. II.

*Rules of Diet in the different Constitutions of Human Bodies.**Lax and weak Fibres.*

Paleness, a weak Pulse, Palpitations of the Heart, flabby and slack Flesh, Laziness, Lassitude, Bloatness, scorbutical Spots are Symptoms of weak Fibres.

Leanness is no Sign of weak Fibres, for though the bundle of Fibres which constitute the Muscle may be small, the Fibres themselves may be strong and springy.

Such as have weak Fibres ought to avoid all great Evacuations, especially Letting of Blood, Substances viscous, and hard of Digestion, a sedentary Life, and moist Air.

They ought to take Aliment frequently, in small Quantities, nourishing,
U ing,

ing, and of easy Digestion, such as Milk, Broths and Jellies of Flesh Meat, Panadas, &c. Their Drinks ought to be austere Wines mix'd with Water, or any Wine mix'd with chalybeat Water; and to use in their Aliment styptick austere Vegetables, such as are enumerated N^o 1, as far as their Stomachs can bear them.

Too strong and springy Fibres.

A Body hard, dry, scraggy, hairy, warm, with firm and rigid Muscles, a strong Pulse, Activity and Promptness in Animal Actions, are Signs of strong, rigid, and elastick Fibres.

Such Constitutions are subject to inflammatory Distempers.

They ought to avoid the Diet proper in the contrary State.

Their Nourishment ought to be emollient and cooling, the Pulps, Juices, Jellies, Mucilages, and Decoctions of Vegetables mentioned

N^o 2.

N^o 2. animal Oils, and all things which relax and increase Fat, avoiding all things seasoned with Spice and Salt: Their Drink, Water, Barley-Water, Whey; and especially to avoid fermented Spirits, which to such are extremely hurtful.

Bathing in tepid Water is beneficial to such Constitutions, and immoderate Labour or Exercise hurtful.

Plethorick Constitutions.

The Signs of a Plethorick Constitution, or of such as abound with laudable animal Fluids, are evident.

The Causes of it are a good Stomach, nourishing Diet, a good Digestion, little Exercise, much Sleep, and Suppression of usual Evacuations, especially Perspiration; therefore the avoiding these, and inducing their Contraries, are the proper Cure.

A plethorick Constitution is subject to a Stoppage of the Circulation, and consequently to Suffocation, Ruptures of the Vessels, and sudden Death; therefore it ought to be speedily broke by proper artificial Evacuations, and restoring the usual natural ones.

Long Abstinence is not proper for plethorick Constitutions, for it thickens the Fluids; frequent Blood-letting, in small Quantities, often increaseth the Force of the Organs of Digestion, fattens, and increaseth the Distemper.

They ought to avoid oily and nourishing Substances; watery Vegetables, as being less nourishing than animal Diet, are proper; and Fish rather than Flesh: In a *Lent* Diet People commonly fall away.

Sanguineous Constitutions.

Such are known by their Complexion, or Colour of their Countenance and Skin: They are subject to Hæmorrhages, Inflammations, especially of the Lungs, Imposthumations, and often to scrophulous Distempers.

All things which accelerate the Motion of the Blood are hurtful to sanguineous Constitutions, as violent Exercise and Watching.

Acid Substances, N^o 5, especially Vinegar, are useful; the copious Use of Vinegar brings Paleness.

The sanguineous ought to avoid the copious Use of all things that abound with an acrimonious Salt and high exalted Oil, as Mustard, Onions, Garlick, Leeks, the Herbs us'd in Seasoning, mention'd N^o 6, and in general, all Spices.

Constitutions subject to Acidity.

Sour Belchings, a craving Appetite sometimes of unusual things, as in the Case of the Green-Sickness, Colical Pains, dry Gripes, change of the colour of the Bile from Yellow towards Green, a sour Smell in the Excrements and Sweat, Paleness of the Skin, Lowness of the Pulse, and some sort of Eruptions of the Skin, are the common Signs of such a Constitution.

The chief Seat of Acidity is in the Stomach and Intestines, from whence it will sometimes pass into the Blood, and other Juices.

Such ought to abstain from the copious use of acid alimentary Substances, mention'd N^o 5, they ought not to eat much Bread, nor take great Quantities of mealy Substances, nor drink much of fermented Liquors especially sour and thin Wines.

Their

Their Diet ought to be rather of animal Substances than vegetable: The Flesh of those Animals which live upon other Animals is most anti-acid, as several Birds, and Water-Fowl; tho' those are offensive to the Stomach sometimes, by reason of their Oiliness. Vegetable and animal Oils are often agreeable to such Stomachs, as Almonds, Pistachos, Cream, Butter, Marrow.

Their Diet ought to consist, in general, of Substances mentioned N^o 4.

Water or Wine not sour or thin, is their proper Drink.

They ought to use much Labour or Exercise, for labouring People have commonly a good Digestion, and subdue the Acidity of their Aliment.

Acidity in the sucking Infant is to be cured by an alkaline Diet in the Nurse.

To know whether Eruptions of the Skin come from an acid or alkaline Cause, one must attend to the previous Diet and the concomitant Symptoms; (Children, by eating unripe Fruit often, have Eruptions upon their Skin) the Lentor, itching Colour, and State of such Eruptions, not inflammatory, nor tending to Suppuration, point rather to an acid Cause, and the Success of the Cure often demonstrates the same, such being often heal'd by animal alkaline Salts.

Constitutions abounding with a spontaneous Alkali.

This Constitution is more natural to Human Bodies, because all animal Substances are alkalescent.

Heat, Thirst, hot nidorose Belchings, Foulness of the Tongue and Palate, a bitter and hot Taste in the Mouth, Sickness, Loathing, bilious Vomit-

Vomitings, Stools with a cadaverous Smell, Pains in the Belly, with Heat, are Symptoms of an alkaline State of the Humours in the Stomach and Bowels.

Such a State disposeth the Humours of the whole Body to Heat, Inflammations, and Putrefaction, hinders Nutrition, and often causeth Eruptions on the Skin, dark, livid, lead-colour'd and gangrenous, and what is commonly called the hot Scurvy.

Such Constitutions ought to avoid alkaline Substances, mentioned N^o 4, *viz.* an animal Diet, especially Fat, Spices, and all Vegetables which abound with an acrimonious Salt and high exalted Oil, and the copious use of Salts in general; all animal Salts are alkaline; Sea-Salt and Rock-Salt, tho' they are of a mix'd Nature, rather increase the Disease; Salt-Petre is the most cooling and proper.

They

They ought to use plentifully the acid Substances mentioned N^o 15, to live much upon Aliments made of Grains or mealy Substances, to eat much Bread, and season much with Vinegar; thin Wines, Wine mix'd with Water, Water with Juice of Limon, and especially Milk and Water, are proper Drinks.

Those who feel no Inconvenience in taking Acids, ought to take them plentifully.

People of such Constitutions ought not to use violent Exercise, nor long Abstinence, which disposeth to such a State, and after long Abstinence they ought not to eat plentifully; they ought to use liquid rather than solid Aliment.

Plethorick Constitutions are subject to fall into this alkaline State of the Fluids, which is more dangerous than that which proceeds from Acidity; for the Bile (which is here redundant) is the strongest Anti-acid,
and

and when it is highly exalted, and acrimonious, is capable of producing all the dreadful Symptoms of malignant and pestilential Fevers, as is evident from the Experiments that were made in the Plague of *Marseilles*. There is nothing corrects the Acrimony of the Bile so much as the acid Diet above-mentioned; therefore one cannot be too early and quick in discerning a Tendency to such a State, and observing if the Person be plethorick, hot, or dry; if the Air be hot; if bilious Fevers reign; if there be any Acrimony in the Fæces, Urine, Sweat; or a yellow Cast in the Skin; with the Signs above-mentioned, by an early Application of proper Remedies, many dangerous and fatal Diseases might be prevented.

Phlegmatick Constitutions.

Sickness of the Stomach, a Sense of Fulness without eating; Crudities
or

or Meat remaining in the Stomach undigested, Dejection of Appetite, Wind coming upwards, but especially tough Phlegm frequently rejected by Vomiting, Inflations and Tumors of the Belly (sometimes short Breath) and Paleness, are Signs of a phlegmatick Constitution; when a Child grows pale, and his Belly swells, as happens to those that are rickety, there is certainly tough Phlegm in the Intestines, which commonly shuts up the Mouths of the Lacteals, and hinders the Nourishment from passing: Persons of such Constitutions ought to avoid mealy Substances unfermented, unripe Fruits, and all viscous Nourishment; they ought not to let Blood, except upon urgent Occasions, nor provoke Sweat, which thickens the Humours.

Their Diet ought to be alkalescent, of Substances mentioned N^o 4, because whatever brings them into an alkaline State is a proper Cure for the
the

the Disease; therefore soapy Substances, which consist of a pungent Salt and volatile Oil, Spices, Salt, Garlick, Onions, Leeks, and the warm Vegetables us'd in Seasoning, Thyme, Rosemary, Savory, Basil, Marjoram, and in general, every thing which exalts the Bile; for bilious and phlegmatick Constitutions are opposite; and even Children so diseas'd ought to use a warmer Diet, than what seems proper to their Age without it.

Phlegmatick Persons ought to drink fermented Liquors and generous Wines, such as put the Blood in a vigorous Motion. Warm Water dissolves Phlegm, but it relaxeth too much.

Thickness of Blood.

Thirst, Leanness, Excess of animal Secretions, as of Urine, Sweat, liquid Dejections, too strong a Perspiration,

piration, are Signs and Effects of too great Thinness of Blood.

For such, the Diet prescrib'd in Debility or Weakness of Fibres, is useful; Milk boil'd with Grains, especially Rice, rather solid than liquid Aliment, and austere Wines for Drink.

Oily or fat Constitutions.

Fat People ought to eat and sleep little, and use much Exercise, in which the Cure chiefly consists.

Whatever heats moderately, stimulating Substances abounding with a pungent acrid Salt, as Mustard, Horse-Radishes, Garlicks, Onions, Leeks, Spices, and the aromattick Plants us'd in Seasoning, Saffron, carminative Seeds, Meats high season'd with Salt, Pepper and Vinegar, are all proper, and dissolve Fat; they have only one Inconvenience, that they create Thirst, and great Quantities

tities of Liquids increase the Disease, by diluting and relaxing the Solids; Salt is a great Dissolver of Fat.

Fat People ought to avoid oily Nourishment; but Soaps, which consist of Oil and Salt, are proper, because they are resolvent; therefore Honey, Sugar, and ripe Garden-Fruits are useful.

Some of the astringent Substances, mentioned N^o 1, are useful, because their Fibres are commonly too lax.

Whatever promotes Perspiration, and therefore Frictions of the Skin, are useful.

Their Drink ought to be thin Wines; Coffee and Tea, as they dilute and stimulate moderately, are useful; great Quantities of oily fermented Liquors increase Fat; mere Water relaxeth too much; moist Air is hurtful to fat People, by relaxing the Fibres, and stopping Perspiration.

Melancholy or atrabilarian Constitutions.

A Tendency to this is known by Darkness or Lividity of Countenance, Dryness of the Skin, Leanness, a quick penetrating Genius, a slow Pulse and Respiration, Obstruction of the Belly, and too great Application to one Object.

To such, all things which heat and promote too great a Perspiration, as all Substances that abound with an acrimonious Salt and volatile Oil, are hurtful, which the Reader may see in the First Chapter. Nourishment viscous and hard of Digestion, and nothing more than salted and smok'd Flesh or Fish; in general, every thing that thickens the Fluids, or reduceth them to a pitchy Condition.

Astringent austere Aliment, mention'd N^o 1, and austere Wines, are hurtful.

Too

Too cold and too hot Air are both hurtful, for in such States of Air melancholy Persons are always worst.

Diluting is beneficial, especially with Water impregnated with some penetrating Salt, Substances which cool, relax the Belly, and resolve the Bile; Barley-Water, Whey, ripe Garden Fruits, emollient Pot-Herbs, especially Lettuce, Cichory, Dandelion, and Honey most of all.

There is one Caution to be observ'd, That the Diet ought to be opposite to the particular Acrimony which occasions the Disease; for if it proceeds from too great Acidity, in such a Case an animal Diet, Broths made of Flesh-Meat, and even Eggs, are proper; if the Cause be alkaline, the contrary Method is useful.

Faulty Motion of the Fluids.

The Blood and other Fluids of a Human Body, are often not only peccant in their Qualities, but Motion, which may be either too slow, too quick, or in some of the Vessels totally obstructed.

Those who have too slow a Circulation, are to be consider'd as in the Case of phlegmatick and fat People; and those who have too quick a Circulation are to be consider'd as in the Case of such as are bilious, hot, and alkaline; and the respective Diets are proper.

In Obstructions of the Vessels inflammatory, the Aliment ought to be cool, slender, thin, diluting, avoiding the copious use of Substances of a saline Quality, which stimulate, and consequently may increase the Inflammations, unless in some Cases where there is hopes by
volatile

volatile Salts to attenuate the Fluid, and remove the Obstruction, or where the Intention is to produce a Suppuration; but it is certain that any stimulating Substance, when it does not remove the Obstruction, increaseth the Inflammation.

In cold Tumors, where the Intention is to dissipate and attenuate, the Diet ought to be diluting and stimulating, consisting of such Substances as are of a soapy Nature, that is, of Salt and Oil.

Wounds.

The Aliment of such as have fresh Wounds ought to be mild, that is, without stimulating or saline Substances, of easy Digestion, of such sort as keeps the Humours from Putrefaction, and renders them oily and balsamick.

When a Suppuration is to be promoted, the Aliment ought to be

more copious and warm, because such induceth a Putrefaction.

When a Sore is healing, the Patient is in some measure in the Case of an Infant that is growing, whose Aliment ought to be such as lengthens the Fibres without Rupture, for it is by such an Elongation of the Fibres that Sores heal; and indeed the Chirurgion ought to vary the Diet of his Patient as he finds the Fibres lengthen too much, are too flaccid and produce Fungus's, or as they harden and produce Callosities; in the first Case Wine and spirituous Liquors are useful, in the last hurtful.

Women in Childbed are in the Case of Persons wounded.

C H A P.

C H A P. III.

Of Acute Diseases.

Fevers, with their various Symptoms.

RIGOR, *Coldness.* A right Regimen during the Rigor or cold Fit in the beginning of a Fever, is of great Importance, and Mistakes of dangerous Consequence: A long continued Rigor is a Sign of a strong Disease, and is in it self an Approach towards Death; during the Rigor, the Circulation is less quick, and the Blood actually stagnates in the Extremities, and pressing upon the Heart creates great Anxieties, and may produce Concretions about the Heart, and in other Parts of the Body; therefore a Rigor increaseth an Inflammation. Those who die of Quartan Fevers, die in the cold Fit; and indeed there

is no Mischief but what may proceed from a Rigor of long Duration.

In such Rigors, all warm Cordials and stimulating Substances are improper, for the first acting with force upon the right Ventricle of the Heart, may drive the Blood with too much Force through the Lungs; and stimulating Substances, by constringing the Vessels, often increase the Symptom.

In such a Rigor, nothing is more proper than Water, which dilutes and relaxes at the same time, and will sooner terminate the cold Fit, and throw the Patient into a Sweat, than the warmest Cordial; if a very small quantity of Rhenish Wine be mix'd with the Water, it will be still more effectual: In this Case strong Frictions of the Extremities relieve.

Anxieties. In Anxieties which attend Fevers, when the cold Fit is over, a warmer Regimen may be allow'd;

allow'd; and because Anxieties often happen by Spasms from Wind, Spices are useful.

In those Anxieties, Soapy Substances which dissolve the Blood, are indicated; ripe Fruits; some of the lactescent Plants, as Lettuce, Endive, &c. and especially Honey, have this Quality.

Thirst. In Thirst attending Fevers, Liquors should not be drank quite cold; for cold Liquors, by constringing the Glands of the Palate and Throat, do not quench Thirst so well as Liquors moderately warm: In this Case subacid Liquors should be drank plentifully; all Salts increase Thirst, except Nitre, and dulcify'd Spirit of Nitre mix'd with Water is very proper in this Case; so are Barley-Water and Emulsions, except in great Weakness and Flatulencies of the Stomach, in which Case Water mix'd with a small quantity of Rhenish Wine is best of all.

Sickness, Vomiting. This is one of the most troublesome Symptoms attending a Fever, because it renders the Patient incapable of taking any thing.

This Symptom is often prevented by giving a Vomit, or cur'd by promoting the Vomiting for a while by tepid Water.

During the Symptom, acid Liquors, and even such as are austere and astringent, are indicated, because such strengthen the Fibres of the Stomach; and indeed Nature directs Patients to such a Diet, for they covet subacid Liquors, and abhor fat and oily things.

Diluting, and sometimes relaxing the Belly, and carrying the bilious Salts downwards, often cures this Symptom.

Attention is to be given to the Appetites of Patients, in this and many other Cases, who have sometimes coveted odd things which
have

have reliev'd them, as Salt, Vinegar, &c.

Vomiting, from a bilious Cause, is cur'd by subacid Liquors; Vomiting, from some putrid Cause, by Salts of all Kinds; in such a Case, Water-Gruel with Cream of Tartar, Rhenish Wine and Water, Jelly of Currants, Marmalade of Quinces, Sorrel boil'd in Broths well skimm'd from Fat, are beneficial.

If the Vomiting comes from a phlegmatick Cause, Spices and bitter things will relieve. The Counterpoison must be adapted to the Cause; for Example, in Poison from Sublimated Corrosive, and Arsenick.

In the first, alkaline Substances; in the second, oily Substances are proper; in both, diluent.

It is easy to judge of the Cause by the Substances which the Patient throws up.

Whe-

Whether Vomit may be safely or properly given, must be judg'd by the Circumstances; if there be any Symptoms of an Inflammation of the Stomach, a Vomit is extremely dangerous.

Wind and *Spasms* are occasion'd by the feverish Heat expanding the aerial Particles in the Fluids.

Whatever is anodyne and quiets Convulsions, and what abates the Heat, relieves this Symptom.

Weakness, or the Impotence of exercising animal Motion which attends Fevers, proceeds from too great Fullness in the beginning, and too great Inanition in the latter end of the Disease; for whatever stops or retards the Circulation in the smallest Vessels, especially those of the Brain (which either of these Causes will do) produceth this Symptom. Those two Causes demand different Methods, in the first emptying and diluting;

ting; in the latter, a more plentiful Nourishment, the use of Wine diluted with Water, and Spices in small quantities, Jellies, Broths, the alkalifcent Quality of which may be corrected with some Acid, unless there be Signs of Acidity, and in that Case the Diet ought to be contrary to the Cause of the Symptom; Viper-Broth is both anti-acid and nourishing.

In Debility, from great Loss of Blood, Wine, and all Aliment that is easily assimilated, or turn'd into Blood, is proper; Blood is required to make Blood; a small quantity of Blood brings the Patient into danger of a Dropsy.

Frictions of the extreme Parts relieve Weaknesses, as they promote the Flux of the Juices and Spirits in the Joints and Limbs.

Fat People are most subject to this Symptom of Weakness in Fevers, because the Fat, melted by the feverish Heat, obstructs the small Canals,
and

and consequently produceth this Symptom. This is evident by the great Loss of Fat such People sustain in Fevers. In the latter end of Fevers, such are weak by the Laxity of the Fibres, and the Emptiness of the smaller Vessels; such therefore must be treated with particular Care, *viz.* after due Evacuations, diluting strongly both by Drink and Clysters, avoiding all things oily, and using Sugar, Honey, and ripe Fruits.

Cordials made of spirituous Liquors are not the best Remedies for this Debility, tho' they increase the Force of the Heart, and are necessary sometimes to keep up the vital Functions, they rather coagulate the Fluid; they add Strength to the Mill, but congeal the Stream. Whatever makes the Circulation more free through the small Vessels, is a Cordial.

Heat; the Degree of which may be known by the Thermoscope, the
Sensa-

Sensation of the Patient, the Intenseness of the red Colour of the Urine, the Sizeness of the Blood, the Diffipation of the fluid Parts, which renders it thicker; the Hardness, Strength, and Frequency of the Pulse, which makes the Friction the stronger, to which the Heat is proportional, the bad Disposition of the Humour, and the dry Temperament of the Body.

Feverish Heat is moderated by Blood-letting, by muscular Rest, by moderate Ligatures which compress the Veins only, and often removed from Joint to Joint, by a mechanical Reason, retard the Circulation; of such sort is dry Cupping, bathing the lower Parts, watery Liquors for Drink, not cold, but tepid; subacid, as Jelly of Currants dissolved in tepid watery Liquors; Decoctions of mealy Substances acidulated, Substances anodyne, Substances which dissolve Concretions, as Sugar, Honey, and
the

the simple Oxymel, often used by *Hippocrates*, plentiful diluting, and restoring as much Water to the Blood as is dissipated by the Heat; all demulcent and relaxing Substances, cooling the Air in the Room, opening the Curtains, and removing too thick Bed-clothes; all stimulating and styptick Substances to be avoided, because they increase the Force of the solid Parts.

Delirium. Too great Alacrity and Promptness in Answering, especially in Persons naturally of another Temper, is a Sign of an approaching Delirium: In a feverish Delirium there is a small Inflammation of the Brain; therefore any thing which increaseth the Circulation in the lower Parts, and diminisheth the Pressure on the Brain, is beneficial, as immersing the Feet in warm Water; nothing relieves the Head more than the Piles, therefore Suppositories of Honey, Aloes, and Rock-Salt, ought
to

to be try'd, relaxing by emollient and watery Substances, both in Drink and Clysters, especially Barley-Cream and Barley-Gruel.

Coma Sleepiness. A Coma will proceed either from a Pressure upon the Originals of the Nerves, by too great Repletion; or from a Penury of Spirits by too great Inanition.

Old Men are subject to Comas by the Tenacity of the Fluids circulating in the Brain, which being resolved by the Fever, obstruct the small Canals of the Brain: In young People it commonly proceeds from Fulness, and is best cur'd by letting Blood, and relaxing the Belly. The Sign of such a Fulness is, a red Countenance, and Eyes inflamed; if it proceeds from a glutinous Oil, it ought to be attempted to be resolved by Water, nitrous Salts, Soaps, and subacid Liquors.

People

People recovering from Comas, must take at first soft Nourishment, and in small Quantities.

Watchfulness. This Symptom, which is sometimes call'd a Coma Vigil, often precedes too great Sleepiness, and is perhaps the most ill-boding Symptom of a Fever.

The Expedients in such a Case are extreme Care to keep the Patient from Noise, and what makes any strong Impression upon his Senses, some of those Helps us'd in a Delirium, because this is an Approach towards it; a moist softening Diet; all Preparations of Barley, Emulsions of Poppy Seeds, and Almonds, Aliment of some lactescent Plants, especially Lettuces, Decoctions of Scorzonera Roots, Almond Cream, and what is called Winter Flummery, us'd as Aliment; Tea, made of Cowslip Flowers, relaxing gently the Belly.

Boerhaave proposes some mechanical Expedients which may perhaps have a good Effect, as a soft Noise of Water distilling by Drops into a Bason, and the Patient trying to reckon them.

The Air perfum'd with the Smell of soporiferous Plants, as Poppies, Mandrakes, Nightshade, Bean Flowers.

Application of Cloths dipp'd in Vinegar to the Temples.

Opiates must never be given but after great Evacuations.

Convulsions. It is of the utmost Importance to know the Cause and the Seat of this Disease, which is often obscure.

In Infants they commonly proceed from Acidity in the Stomach, and are cured by terrestrial Absorbents; in such indeed Convulsions attending Fevers are not quite so dangerous.

Convulsions arising from some Acrimony in the Stomach, or from something vellicating a Nerve in its Extremity, and not in its Original where it ariseth from the Brain, are not very dangerous.

Convulsions which arise from great Evacuations, as great Hæmorrhages attending Fevers, are dangerous.

Convulsions arising from Inflammations of the Membranes of the Brain are commonly fatal: The Symptoms attending them are a great Heat, a hard Pulse, and a Delirium: The Remedies, and even those from Diet, are to be us'd according to the Seat of the Disease.

If from the Stomach, such Aliments as are contrary to the particular Acrimony, Acid Alkaline, or Oily, residing there, as in the Case of Vomiting.

If from something impacted in the Brain, warm volatile and spicy Substances will increase the Disease;
in

in that Case, Substances which relax and dilute are proper, especially such as open the Belly; which, *See in the First Chapter*; and in general, the Regimen prescrib'd in a Coma, or Delirium.

Violent Sweats proceed from a Laxity of the Vessels, and too vehement a Circulation of the Blood.

Profuse Sweats deprive the Blood of its most fluid Parts, thicken, and often cause Obstructions; it is not good Practice to push Sweating too much in Fevers, except in such as are pestilential.

In profuse Sweats, Care at least should be taken, by diluting, to restore the Liquid which the Blood loseth, and to use the Methods advised in too great Heat, by taking away some of the Coverings of the Bed, and admitting of cool Air, and using a Diet moderately astringent; Wine, Spices, and spirituous Liquors, in this Case, have often a

good Effect; spirituous Liquors thicken the Fluids; Sage is a good Remedy in the Case of profuse Sweats.

A Diarrhœa Looseness proves often a dangerous and fatal Symptom in Fevers, it weakens, excoriates and inflames the Bowels, occasions Bloody-Fluxes, thickens the circulating Juices, and exhausts the Strength of the Patient; notwithstanding, a critical Diarrhœa is not to be stopt, for fear of incurring these Dangers.

Attention is to be given to the Cause, if Acidity; it is to be cur'd by Anti-acids; but, as in Fevers, the Cause is more frequently alkaline and bilious, acid or sour things relieve, and it happens that oily Substances by blasting the Acrimony will do good in Diarrhœas. Oily Substances of themselves do not irritate or provoke Diarrhœas, they only lubricate or make the Bowels slippery. Diarrhœas arising from Quantities of Fruit are often cur'd by Emulsions.

Vomiting,

Vomiting, by evacuating the irritating Cause, often cures such Diarrhœas.

Anodyne Substances are proper, and generally speaking, solid and dry Aliment, rather than liquid.

Inflammatory Eruptions. In all these of any kind whatsoever, as Small-pox, Meazles, Scarlet Fever, Purples, the Intention in Diet ought to be, to avoid strong Sudorificks, which push out too great a quantity of the Matter upon the Skin; to use cooling and temperate Diluents, which keep the Matter fluid and moveable, so that it may be secern'd from the Blood; to keep warm during the Eruption; and that the Diet be cool; for which Reason the moderate Use of Acids, as Juice of Limon, is indicated.

A due Attention to the few Rules above-mention'd, in the several Symptoms, will prove very successful in the Cure of most Fevers. I shall

only add a few more according to the various Kinds of Fevers and Inflammatory Distempers.

An Ephemera, or a Fever of one Day, is cur'd by Abstinence, Rest, and Diluting; and the same Method will prove effectual if the Fever lasts several Days, and is not putrid, or attended with a greater Inflammation and Acrimony, and Obstruction of the Vessels in some Parts of the Body, amongst which is what is commonly call'd, a *Causus*, or Burning Fever.

The Causes of such a Fever are various; Errors in the Non-Naturals, Air, Meat and Drink, Rest and Motion. Such a Fever will be rais'd by vehement Exercise or Labour, Heat of the Sun, by long Thirst, by the immoderate Use of fermented and spirituous Liquors; and hot things, as Spices; and by great Lassitude endured any way, especially in hot Weather.

It

Its Symptoms are a burning Heat in the Skin, a Sensation of extreme Heat inwardly; sometimes Coldness in the extreme Parts; Dryness of the Skin, Mouth, and Nostrils; a Dryness and Roughness of the Tongue; laborious and short breathing; great Thirst; Loathing, Sickness of the Stomach, and Vomiting; Anxiety, Restlessness, Weariness; sometimes a Cough and Hoarseness; Watchfulness and Delirium, and Exacerbation every other Day.

Such a Fever is often resolv'd by a bleeding at the Nose, which ought not to be stopt unless it endangers Life. It is likewise often in the critical Day resolv'd by Sweating, Vomiting, Looseness, and Spitting of thick Phlegm. The fatal Signs are commonly bloody Urine, Difficulty of Swallowing, watery Sweats about the Head and Face, without Relief; Coldness of the Extremities, Trembling, too great a Looseness; and

sometimes an Inflammation of the Lungs.

The Regimen, in such a Fever, is keeping the Air of the Room pure and cool, untainted with Fire, Smoke, or the Breaths of many People; they ought to have no more Bed-clothes than barely protects them from Cold; their Curtains ought to be kept open so as to renew the Air; and their Posture in lying, as erect as they can bear; the Sick, in this Condition, covet all these things, and their Contraries offend them.

Their Drink ought to be cool, mild, subacid, tepid, given in moderate Quantities, and often, as Water with Juice of Limon or Tamarinds.

Their Aliment ought to be light, of farinaceous Vegetables, as Water-Gruel, Preparations of Barley, with some Juice of Limon; Rice boil'd in Whey, and strain'd. Roasted Apples in the Progress of the Disease; a little

tle toasted Bread with Rhenish Wine and Water, Jelly of Currants; Broths and Jellies made of animal Substances are rather too alkalescent, at least they ought to be qualify'd with Juices of Limon, or some acid.

Sometimes such alimentary Substances as gently stimulate the Belly, are useful, as some ripe Fruits, Strawberries, Currants, Mulberries.

The Symptoms increase by the Use of hot things given either as Aliment or Medicine.

Intermitting Fevers.

They are (at least in this Country) very obstinate, often return in spite of all Remedies, and by long Continuance they degenerate into Hepatical Fevers, and many chronical Distempers, as Jaundice, Dropsy, Schirrus's, and Scurvies; therefore in this Disease a right Method, both of Medicines and Diet, is of great Importance.

tance. There is a great Variety in these Diseases, as to the Intervals of Times between the Paroxysms; Tertians sometimes redouble their Paroxysms, so as to appear like Quotidians. I think it may be taken as a general Rule, That the greater distance of Time there is between the Paroxysms, the Fever is less dangerous, but more obstinate.

There is a different Regimen to be us'd during the Continuance and Absence of the Paroxysm; and in the Paroxysm itself, during the Rigor or cold Fit, the Heat and the Sweat.

During the Rigor, the Regimen prescrib'd in the foregoing Part of this Chapter, in the Article of Feverish Rigors, is proper in all Fevers, and Care is to be taken by all proper Methods to shorten that Period as much as possible, and by tepid Diluents to bring on the Sweat soon, but not to push it beyond its due Measure, because an intermitting Fe-

ver

ver relaxeth and weakens the Body extremely.

Between the Paroxysms, too great Abstinence is hurtful as much as too great Repletion; as intermitting Fevers are often of long Continuance, extreme Abstinence is impracticable, and would reduce the Patient to a Condition not to be able to sustain the Shock of the next Attack.

Between the Paroxysms, such Substances as temper, correct, and subdue the bilious Alkali, as acid Substances, nitrous Salts, small thin Wines with Water, Chicken Broth with Juice of Limons; Wine with Bitters infused, are proper; Cichory and Dandelion are useful, because the express'd Juices of them cure intermitting Fevers in warm Countries; the Physicians of these Countries likewise use astringent Vegetables, *See* Chap. I. N^o 1.

Exer-

Exercise, to as great a degree as the Patient can bear, is extremely beneficial between the Paroxysms.

But the chief Remedy of all is to endeavour to prevent the cold Fit, by getting to Bed, by Frictions, and some sudorifick and warm Liquor; for by putting off the cold Fit some Agues have been cur'd.

Letting of Blood seldom does good, and often a great deal of hurt in intermitting Fevers; but the Condition of the Patient is to be consider'd in this Case.

Intermitting Fevers have been observed to free from some Chronical Distempers, as the Gout and Convulsions, but they often induce great ones themselves.

INFLAM-

INFLAMMATORY DISEASES.

*A Phrensy, or Inflammation of the
Brain.*

This Disease, of all others, requires the speediest Applications, profuse Hæmorrhages from the Nose commonly resolve it, and copious Bleeding, by opening the temporal Arteries, are the most effectual Remedies: But to stick to my Subject, which is the Diet.

Substances which cool, and at the same time relax the Belly, are highly beneficial, as Tamarinds boil'd in Water, which taken plentifully may at last bring a Looseness which is a great Relief to the Head.

Soliciting the Blood to other Parts of the Body; therefore tepid Bathings of the lower Parts, and procuring the Piles, relaxing Fomentations apply'd to the Veins, which carry the Blood from the Head, relieve in this Disease.

ease. Cool Air, and Sitting up, if possible; for the warm Air of the Bed exagitates the Blood.

The Aliment ought to be slender, of farinaceous Substances, as Water-Gruel acidulated, or subacid ripe Fruits, with their Jellies; the Drink small, diluting, and cooling, Barley-Water, Small-Beer, or the Decoction of Tamarinds above-mentioned. All such gentle Anodynes as are to be found amongst the Alimentary Kind, are safe. See the Articles of Delirium and Watchfulness in this Chapter.

Quincy.

The Tumour of the Throat, which occasions the Difficulty of Swallowing and Breathing, attending this Distemper, may be of various sorts: Sometimes it proceeds from a Serosity obstructing the Glands, which may be watery, œdematose, schirrous, accord-

according to the several degrees of the Viscosity of the Humour; sometime inflammatory, which Inflammation will sometimes end in a Suppuration, or Gangrene.

The Difficulties of Breathing and Swallowing, which happen without any Tumour outward or inward, after long Diseases, proceed commonly from a Resolution or paralytical Disposition of the Parts, and is the immediate Forerunner of Death.

The Regimen in those Quincies which proceed merely from the Obstruction of the Glands, must be to use such warm Liquors as gently relax, soften, and moisten those Glands, such as carry off the redundant Serum by Stool, Sweat, and Urine; or by stimulating, open the Emunctories of these Glands to secern the Humour *.

* See Chap. I.

In a mere watery Tumour, the Diet may be more warm than in the inflammatory, and the moderate use of Wine often relieves the Patient.

The Difficulty of Swallowing and Breathing, occasion'd by Schirrosities of the Glands, is not to be cur'd any otherwise than by Extirpation.

Those who are subject to Inflammations of the Throat, ought to live temperately to prevent a Plethora; or to break such a Fulness speedily by proper Evacuations, to beware of cold Air, too astringent or stimulating Aliment or Medicine, and violent Exercise, which, by increasing the projectile Motion of the Blood, heat; but especially the swallowing of cold Liquors when they are hot.

In these Inflammations a slight Diarrhœa relieves; therefore Aliments which promote it are useful, as Tamarinds infus'd in Whey. Decoctions and Emulsions of farinaceous
Vege-

Vegetables moderately acidulated, and such as abound with a cooling nitrous Salt, are proper; it is commonly thought that Punpenella, Saxifraga, or Burnet, is a Specifick in this Case: Every body knows the Benefit of Mulberries, taken all manner of ways. All Acids, as Sorrel, Juice of Limon, &c. abate Inflammations.

The Mouth and Throat must be kept moist, and the Nose clear, that the Air may have a free Passage through it; for Air drawn by the Mouth, dries.

When the Deglutition is totally abolish'd, the Patient may be nourish'd by Clysters, which I have known to have been done for a whole Week, after which the Tumour suppurated.

When the Inflammation ends in a Gangrene, the Case generally proves mortal, except it be only in the *Tonsils, Uvula,* and Palate, and go no
Z further,

further, which Parts may be separated, and the Patient live.

Inflammation of the Lungs.

Such may happen either in the bronchial or pulmonary Vessels, and may soon be communicated from one to the other; when the Inflammation affects both the Lobes and the whole Body of the Lungs, the Case is desperate, because the Circulation must be stopt, and no Blood can flow back into the Heart. Besides the general Causes of Inflammations, those which affect the Lungs particularly, are a bad Conformation of the Lungs and Thorax commonly attended with an Asthma, Air too hot, cold and moist, abounding perhaps with caustick, astringent, and coagulating Particles; the Lungs, properly speaking, are an outward Part of the Body, expos'd to the Air, which, by its immediate Contact may easily
coa-

coagulate the Blood which flows along the Surfaces of the Air-Bladders, and I believe the Qualities of the Air are the general Cause of the Inflammation of the Lungs which happen in the Winter time.

As the Lungs are the chief Organ of Sanguification, crude and viscous Chyle, viscous Aliment, Spices, but especially spirituous Liquors, may occasion this Inflammation; too great an Exercise of the Lungs, so as to occasion a short and laborious Breathing, or keeping them too long upon the Stretch by Vociferation, or loud Singing, may produce the same Effect: There are coagulating Poisons which affect the Lungs very suddenly; extreme violent Passions, by affecting the Motion of the Heart, may do the same; it is a common thing to see People in sudden Transports of Anger breathe short. Inflammations are sometimes translated from other Parts to the Lungs; a Pleurisy easily

passeth into Peripneumony. The avoiding those Causes is the best Rule of Diet to prevent the Disease; besides, speedy and plentiful letting of Blood before it has quite taken place.

This Disease is often cur'd by the critical Resolution, Concoction, and Evacuation of the morbid Matter, which is either attenuated so as to be return'd into the Channels, and to go on in the common Thread of Circulation, or expectorated by Coughing, which may be easily known by the Abatement of Symptoms, *viz.* the Fever, Difficulty of Breathing, Thirst, Anxiety, Restlessness, and the Patient's falling into gentle breathing Sweats. One of the best Resolvents is the Blood of the wild Goat.

Copious Bleeding is the most effectual Remedy in the beginning of the Disease; but when the Expectoration goes on successfully, not so proper,

proper, because it sometimes suppresseth it, and in that Case Sudorificks thicken the Matter that is expectorated. The Motions of Nature ought to be followed. This by the way.

From the Symptoms in this Stage of the Disease, and the use of the Lungs, it is evident the Aliment ought to be more slender and thin than in any other inflammatory Disease whatsoever, common Whey being sufficient to preserve the Strength of the Patient; watery Liquors, and even the Steam of warm Water taken in by the Breath, attenuates the impacted Matter. Relaxing Aliment, of which Barley and all its Preparations are the best.

In this State, Diureticks, which have not much Acrimony in them, are proper, for Fluxes of Urine relieve the Lungs; for this Intention, an Infusion of Fenel Roots in warm Water, with Milk, is good, both as Nourishment and Drink.

If Nature relieves by a Diarrhœa, without sinking the Strength of the Patient, it is not to be stopt, but promoted gently by emollient Clysters.

Decoction of Cichory, Lettuce, as being anodyne and resolvent, are proper.

If the Patient is not reliev'd nor dies in eight Days, the Inflammation ends in a Suppuration and an Abscess in the Lungs, and sometimes in some other Part of the Body; the Symptoms of which are, an obstinate dry Cough, increas'd by Motion and taking of Food; the easiest Posture in Lying being upon the affected Side; a continual Lent-Fever, with Rigors invading with uncertain Periods; Exacerbations after Motion and Repast, Thirst, Night-Sweats, a frothy Urine, Paleness, Leanness, Weakness.

In such a Case one must forbear letting of Blood. The Diet must be mild, soft, incrassating, and more plen-

plentiful; tepid Vapours admitted into the Lungs, of Decoctions of proper Ingredients; and when by the Symptoms and Time the Imposthume may be judg'd to be ripe, the Vapour of Vinegar it self, and any thing which creates a Cough, as Oxymel, or Vinegar and Honey, Exercise and Concussion are proper, the sooner it is broke, the less Danger to the Lungs.

Tho' such a State is extremely dangerous it is not quite desperate; the Aliment ought to be Milk; the Drink, Milk, and Barley-Water, and such alimentary Substances as are expectorating and cleansing, with gentle Anodynes, that the Patient may have some Rest. *See Chap. I.*

The principal Intention in every State of Inflammation of the Lungs is to promote Expectoration, and to restore it when it is lost,

If the Inflammation ends in a Gangrene, the Case is desperate; if in a Schirrus, incurable.

There is a spurious sort of a Peripneumony, not inflammatory; when the Vessels are obstructed with a viscid Pituite that mixeth with the Blood, and invades in cold Weather, it is dangerous, and often suffocates; it is incident to weak and old People. In this, some of the Methods used in the Inflammatory are proper, but not so copious Bleeding, Clysters frequently injected; Aliment more generous, Broths, and Jellies with Juice of Limon, Hydromel, or Hony and Water, for Drink, soft Oils, and Aliments which abound with a soft, not volatile Oil, are beneficial.

A Peripneumony is the last fatal Symptom of every Disease, for no Body dies without a Stagnation of the Blood in the Lungs; as long as

it circulates through the Lungs, it will circulate through the rest of the Body. The total Extinction of Breath is caus'd by the Stagnation of Blood in the Lungs.

Pleurisy.

There is none of the Membranes which invest the Inside of the Breast, but may be the Seat of this Disease, the Mediastine as well as the Pleura.

The Causes of this Disease, besides those common to all Inflammations, are often a particular Disposition to inflammatory Distempers, a Straitness of the Arteries of the Pleura, a Callosity of that Membrane, an Adhesion of the Lungs, the sudden Admission of cold Air by too thin clothing, too hot a Regimen, and especially the copious use of spirituous Liquors, cold Liquors drank when the Body is very hot, a Trans-
lation

lation of some inflammatory Matter from some other Part, but most of all cold Air from a Northerly or North-easterly Wind; from which Causes proper Cautions may be taken in the Regimen by way of Prevention.

This Disease is sometimes dry, without any Spitting, and sometimes attended with Expectoration from the Lungs, and that is taken off by a Coction and Resolution of the feverish Matter, or terminates in Suppurations, or a Gangrene.

The Regimen ought to be much the same as in a Peripneumony, a cool, relaxing, slender, diluting Diet, and avoiding all things which increase Heat, even to hot Air.

The Symptoms of Suppuration are the same as in Inflammations of the Lungs; when the Matter is made, the Side must be opened to let it out.

When

When the Disease is obstinate against all Remedies, a sudden Abatement of the Pain, a quick weak Pulse, sometimes intermitting, short Breath and cold Sweats are Symptoms of a Gangrene, and approaching Death.

Paraphrenitis, or Inflammation of the Diaphragm.

The Symptoms of this Disease (which is often mistaken) are a violent Fever, a most exquisite Pain increas'd upon Inspiration; by which it is distinguish'd from a Pleurisy, in which the greatest Pain is in Expiration.

This Pain is increas'd by Sickness, Vomiting, Repletion of the Stomach, or any Compression of the Muscles of the Abdomen, by rendering the Fæces or Union. The Breathing is extremely quick, suffocating,
and

and seems to be perform'd only by the Motion of the Breast : It is likewise attended with a Delirium, Fury, and an involuntary Laughter, the Convulsion emulating this Motion.

This Disease terminates as Pleurifies and Peripneumonies, but is generally fatal if it suppurates the Pus, is evacuated into the lower Belly, where it produceth Putrefaction, and a most miserable and painful Death.

The Regimen, if any can be successful, ought to be the same as in Pleurifies.

Inflammation of the Liver.

The hepatical Artery, and the Vena Porta, carry the Blood into the Liver ; the first being very small, and the Motion of the Blood in the last being slow, the Reasons are that Inflammations in the Liver are not so frequent as in
some

some other Parts of the Body; but when they obtain, extremely dangerous, unless they take up but a small Part of the Liver, and such happen more frequently than is commonly imagined.

Some of the best Cautions in Diet may be taken from the Causes and Symptoms of this Disease.

Which, besides the general Causes of Inflammations, are extreme Fatness. Fat dissolv'd by Heat and Inflammations obstructs the Vessels of the Liver very suddenly. Cattle fattened by good Pasturage, after violent Motion, sometimes die suddenly; in such the Liver is found to be inflamed and corrupted. An atrabiliarian adust Temper of the Blood and Gall, an acrimonious or purulent Matter, stagnating in some other Organ, is more easily deposited upon the Liver than any other Part, especially if attended with the use of hot and spicy Aliments, spirituous
Liquors,

Liquors, great Heat, and a Fever; Erosions, by the Acrimony of the Gall, or Obstructions by Viscosity; any Callosity, Schirrus, or Stone in the Liver; Thirst, long endur'd, being suddenly chill'd by cold Air, cold Water, or drinking cold Liquors after great Heat; Vomits given injudiciously, when the Liver is already unsound, which if they do not remove the Obstruction, exagitate the Liver too much; inveterate hypochondriacal Distempers. All these Causes may produce Inflammations of the Liver.

In such a Case, the Liver being swell'd compresseth the Stomach, Diaphragm, and the neighbouring Viscera of the lower Belly, stops the Circulation of the Juices, the Generation and Excretion of the Gall, and all Digestion; produceth an Infinity of bad Symptoms, the Jaundice, with all the Diseases depending upon it; for the Liver receives the

refluent Blood almost from all the Parts of the Abdomen, and is the chief Instrument of all the Digestions which are made there. A Fever, an Inflammation and pungent Pain on the Region of the Liver and Diaphragm, a Tension of the Hypochondres, Yellowness of the Skin and Eyes, and a Saffron-colour'd Urine, are Signs of an inflammatory Disposition of the Liver.

This Disease ends as other Inflammations, being cur'd either by Resolution, Concoction, and Excretion of the morbid Matter, or terminates in an Abscess, Schirrus, or Gangrene.

During the first State, a warm Regimen and Saffron, which is reckon'd a Specifick, is improper.

Cooling resolving Liquors taken inwardly, as Whey, with Sorrel boil'd in it; outward Fomentations, and frequent Injection of Clysters, Bathing and Frictions, relax, and render the Matter fluid; Hony, with a little

tle Rhenish Wine, or Vinegar; the Juices and Jellies of some ripe Garden Fruits; and those of some lactescent papescent Plants, as Endive, Dandelion, Lettuce, are resolvent.

Violent Purging hurts, gently relaxing the Belly relieves, Diluents with nitrous Salts are beneficial, or Tamarinds boil'd in warm Water or Whey; bloody Stools, not in an extreme degree, or streak'd with Blood, ought not to be stop'd, because they help to resolve the Distemper, and Hæmorrhages by the Nose often do the same.

The feverish Matter is often carried off by Urine, and therefore Diureticks not highly stimulating, are proper.

Sweating ought not to be promoted by warm Cordials, but encourag'd by warm diluting Liquors.

It is a deplorable Case when the Inflammation terminates in a Suppuration, unless the Abscess points outwardly,

wardly, so as it may be opened; for if the Pus be evacuated into the Abdomen, it produceth dismal Symptoms, Putrefaction, or an incurable hepatical Dysentery, or Bloody-Flux.

The Pus, from an Ulcer of the Liver, growing thin and ichorose corrodes the Vessels (for the Liver of all the Viscera, is the most friable, and easily crumbled or dissolv'd) it is often carried into the Blood, and rejected by Vomiting, with a cadaverous Smell, attended with great Thirst; if it is carried downward, it occasions a purulent colliquative Diarrhœa; acid Substances relieve most in this Case.

This Disease may happen to produce a Cancer, or Schirrus; one cannot say that the last is absolutely incurable, because it has been known by Experience that Grass and fresh Pasture has cur'd it in Cattle; and perhaps the express'd Juices of Grass,

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and

and some opening Plants, may do the same thing in Mankind, as of the lactescent Plants above-mention'd.

The Diet prescrib'd here is necessary in a Jaundice, and all Diseases of the Liver; and Abstinence from such Substances as induce Putrefaction, especially salted Fish and Flesh, and above all, strong Liquors.

Inflammation of the Stomach.

The Symptoms of this Disease are a vehement, burning, fix'd, pungent Pain in the Stomach, attended with a Fever; a great Exacerbation of this Pain the Moment after swallowing any thing, succeeded with Vomiting; a painful Hickup, and great Anxiety. The Causes of these Symptoms are those common to all Inflammations, a natural Weakness, and perhaps Erosion of the Coats of the Stomach, and acrid Substances taken as Aliment and Medicines.

If

If this Disease is not speedily cur'd, it proves fatal.

It terminates in a Cure by a Resolution of the morbifick Matter, a Suppuration, Schirrus, Cancer, but most commonly in a Gangrene.

Of all Diseases this demands most a total Abstinence from every thing that has Acrimony in it, even the nitrous cooling Salts, which are beneficial in other Inflammations, irritate too much; Vomits, all Cordials of volatile or spicy Substances; spirituous Liquors are no better than Poison, and Milk generally curdles; Aliments must be given frequently, and by Spoonfuls at a time, for any Distension increaseth the Inflammation; a thin Gruel of Barley, Oatmeal, Whey, with very little Sugar, or Honey, or Chicken-Broth, are proper Aliments; Whey, emollient Decoctions, Barley-Water, Emulsions, are proper Drinks; and it has been found by Experience, that chalybeat

Waters have been agreeable to the Stomach even in this inflammatory State. If there happens an Imposthume, Honey, and even Honey of Roses, taken inwardly, is a good Cleanser, and Decoctions of Comfrey Roots, healing; speedy and plentiful Bleeding, Fomentations, and Clysters, have the same good Effect as in other inflammatory Distempers.

The same Regimen is necessary in a Schirrus, or Cancer of the Stomach; though nothing will be quite effectual.

The same Regimen is to be observed in the Inflammation of the Spleen, Caul, Pancreas.

Inflammation of the Guts.

The Intestines or Guts, most frequently the small ones, may be inflam'd by any acrid or poisonous Substance taken inwardly; from any
puru-

purulent Matter translated upon them from some other Part of the Body; from Bile, extremely acrimonious, by a violent Tension; from a Convulsion filling them with Wind.

The Symptoms are a total Stoppage of the Passage; a vehement fix'd burning Pain, irritated by things taken inwardly, when any thing toucheth the affected Part, it excites Vomiting, sharp griping Pains, with Wind in other Parts of the Bowels; the Consequences of such an Inflammation are an Ileus, what is commonly called the Twisting of the Guts, but is really either a Circumvolution or Insertion of one part of the Gut within the other. All these Symptoms are attended with a Fever.

It is of the utmost Importance to know what the Causes of Colicks are; for as they are various, the Remedies in one Case are quite opposite and destructive in the other; for

the spicy warm carminative things which are given in a Colick, from a phlegmatick or cold Cause, are Poison in an inflammatory one; they may be distinguish'd by the Fever, high Pulse, Thirst, and flame-colour'd Urine attending the Inflammation; as to the Heat, tho' it is great likewise by the Violence of the Pain, the Extremities grow cold; besides, there is a sudden Prostration of the Strength or Weakness attending this Colick, more than any other.

This Disease admits of a speedy Remedy, or none, for it ends in an Ileus, and Mortification of the Bowels very soon.

Besides a copious Bleeding, there is hardly any other Method but fomenting and relaxing the Bowels by emollient tepid Liquids, both taken by the Mouth and by Clysters, injected hourly; yet it has been known by Experience, that Acids have relieved in very desperate Cases, as
Juice

Juice of Limons taken by the Mouth, and Vinegar and warm Water given in Clysters, have sav'd the Patient, because of the incessant Vomiting; Opiates to quiet the Convulsions are sometimes necessary.

Warm Fomentations even of warm Animals to the Belly, are extremely beneficial.

If the Inflammation happens to be in the lower Guts, it is not so dangerous; and even when it suppurates, it admits of a Cure, then it can be reach'd by proper Medicines in the Form of Clysters; in the latter end of such a Case Chalybeat Waters are beneficial.

If the Patient survives three Days, the Acuteness of the Pain abates, and a Chilliness or Gruing affects the Body, it betokens a Suppuration, and in a few Days the Matter flows either into the Cavity of the Abdomen, producing all the Symptoms which happen in the Imposthumation

of the Liver, or into the Cavity of the Intestines, and causing a purulent Bloody-Flux, and often a Consumption, *Sinus's, Fistulas.*

Whey and Chalybeat Waters are often beneficial in such a Case, as Drinks.

The Aliment ought to be of such things as generate little or no Excrements, as Broths of Flesh-Meat, with Scorzonera, Parsley, or Fennel boil'd in them; Goats Whey is likewise excellent; fat and oily Substances generally hurt.

The Continuance of the Fever, clammy Sweats, Paleness, an ichorose Diarrhœa, foetid, black, or like the Washings of Flesh, a small intermitting Pulse, and at last a total Cessation of Pain, are Signs of a Gangrene and approaching Death.

If none of the foremention'd things happen, if the Fever abates, and the Patient complains of a Weight, dull Pain, Stoppage of the Excrements,

a Schirrus is forming, which increaseth daily, and may terminate in a Cancer, which Purgings, and indeed all Medicines irritate; the Patient in such a Case may protract a miserable Life with an exact thin Diet of Whey, Broths, and such things as produce no Fœces, or by alimentary Clysters.

A Thrush.

By this Name are call'd small, round, superficial, Ulcerations, which appear first in the Mouth, but as they proceed from the Obstruction of the Emissaries of the Saliva, by the Lentor and Viscosity of the Humour, they may affect every Part of the alimentary Duct, except the thick Guts; they often succeed Fevers, especially those that inflame the Intestines, or are attended with a Looseness; and they are just the same in the inward Parts as Scabs in the Skin, and fall off from the Inside of the
Bowels

Bowels like a Crust: The nearer they approach to a white Colour, the less dangerous.

The viscous Matter is to be push'd out, therefore Bleeding in the beginning is not proper, nor Sudorificks, because they thicken; but Sweating is beneficial, when the Matter is quite push'd out; tepid, diluent and small Liquors are good in the first State, and Bathing, if the Patient can bear it, with Gargarisms, Clysters; afterwards the Food ought to be nourishing, detergent, Panadas with Bread and Water, Bread and Milk, Honey mix'd with the Aliment, when they fall, Aliment demulcent, soft, anodyne, and the moderate use of Rhenish Wine; when they are separated, lenitive, purging Substances.

Inflam-

Inflammations of the Kidneys.

The Kidneys are subject to Inflammations as much as other Parts of the Body.

A pungent Pain in the Region of the Kidneys, a Stupor, or dull Pain in the Thigh, Colick, Wind, Vomiting, a Fever, Urine sometimes totally suppress'd, in small Quantity, high colour'd; and which is worse, sometimes quite pale, without any Sediment, are Symptoms of an Inflammation of the Kidneys; as to the Sensation of outward Heat, the Extremity of Pain often creates a Coldness in the Extremities, but such a Sensation is very consistent with an inflammatory Distemper.

Whatever obstructs the Blood in the Extremities of the Arteries of the Kidneys, will produce this Disease; a Wound, Abscess, Bruise, Swelling, Lying much on the Back, too violent

lent Motion, especially walking in hot Weather; whatever obstructs the Passage of the Urine, as a viscid Matter, Gravel or Stone; every thing which drives the Blood into the Urinary Canals, Heat, hard Riding, too great Fulness of Blood, but especially sharp and forcing Diureticks: Lastly, Spasms and involuntary Contractions of the Vessels of the Kidneys.

Coffee-colour'd Urine is not a dangerous Symptom; it proceeds indeed from a Mixture of a small Quantity of Blood with the Urine, but often prognosticates a Resolution of the obstructing Matter, and the Expulsion of Gravel or a Stone after great Pain; pale Urine is a Symptom of a more lasting and dangerous Disease.

After plentiful Bleeding, and a careful avoiding of all stimulating Diureticks, which in this State of the Disease will increase it, the Expulsion of the obstructing Cause must
be

be promoted by emollient and soft Liquors drank plentifully, by Clysters of the same frequently injected, by Bathing and outward Fomentations, by opiate and anodyne Substances, which stupify and relax the Fibres; those Liquors must be swallow'd down notwithstanding the continual Vomiting; for Vomiting is the Instrument of Nature to promote the Expulsion of the Stone, Gravel, or other obstructing Cause.

Whey, and in a great feverish Heat, Butter-Milk, Emulsions of Barley and Poppy Seeds, Honey in Whey and Water, are proper Liquors for this Intention.

When the Gravel, Stone, or other obstructing Cause is separated from the Kidney, soft express'd Oils, and oily Substances relax the Passages; if the Pain proceeds only from Gravel, or a Stone, oily Substances may be join'd safely with stimulating Substances, as with Juice of Limon, Juniper

niper-Water, and some diuretick Syrup; this by the way, for it is out of my present Subject.

Violent Motion, as jolting in a Coach, may be us'd in this Case.

The Pain protracted beyond seven Days, a Pulsation, Chillness, often and irregularly returning, a Heaviness and Stupor in the Part, are Signs of making of Matter, which when made will appear in the Urine.

In which Case soft and balsamick Substances are beneficial, for if the Matter stays long, the Case is incurable.

It happens sometimes to end in a Fistula, with which the Patient may live many Years in no great Uneasiness. Butter-Milk, not very sour, has been reckon'd a great Secret in Ulcers of the Kidneys, and Chalybeat Waters have been beneficial to some; Spruce Beer is a good Balsamick in such a Case: I should advise soft Malt Liquors rather than Wine.

Inflam-

Inflammations of the Kidneys sometimes end in a Schirrus, or great Stone in the Kidneys.

A sudden Remission of the Pain, with cold Sweats, weak and intermitting Pulse, Hiccup; no Urine, or in small Quantity, black and fœtid, are Signs of a Mortification and approaching Death.

The Regimen of such as are subject to nephritick Symptoms may be in some measure taken from what is above-mentioned.

Such ought to be extremely careful of the choice of their Liquors; sharp Wines which abound with Tartar, are hurtful; Malt Liquors not hard, nor stale, are certainly better to make use of; some of the softest Diureticks mentioned *Chap. I. N^o 15.* to avoid acrimonious Substances in their Aliment, use moderate Exercise, and not to lie hot, soft, nor much upon the Back.

Apoplexy.

This Disease is a sudden Abolition of all the Senses, external and internal, and of all voluntary Motion, by the Stoppage of the Flux or Reflex of the Animal Spirits through the Nerves destin'd for those Motions, commonly attended with a strong Pulse, laborious Breathing, a deep Sleep with Snorting.

There is no difference between a Person asleep, and in an Apoplexy, but that the one can be awak'd, and the other cannot.

The Causes of this Disease are a particular Confirmation of the Body, as a short Neck; for there be some who have fewer Vertebrae in their Necks than others; long-necked People are subject to Consumptions, and short-neck'd to Apoplexies, tho' this Rule is not generally true; a gross, plethorick, fat, phlegmatick Constitution,

tion; whatever hinders the Motion of the Blood through the Arteries of the Brain, as polypose Concretions, especially about the Heart, attended commonly with an unequal Pulse, a Vertigo, and sometimes a momentary Loss of the Eye-sight; an inflammatory and coreaceous Thickness of the Blood, preceded by a Fever, attended with the Head-ach, Redness of the Face and Eyes; Old Age, attended with a glutinous, cold, catarrhus, leucophlegmatick Constitution; in such, the Forerunners of an Apoplexy are Dulness, Inactivity, Drowsiness, Sleepiness, Slowness of Speech, and giving Answers, Vertigoes, Tremblings, Oppressions in Sleep, Night-Mares; Weakness, Wateryness, and Turgidity of the Eyes; pituitous Vomiting, laborious Breathing upon the smallest Motion; whatsoever compresseth the Vessels of the Brain so as to stop the Flux of the animal Spirits and Blood; a great

Fulness of Blood with its Velocity, increas'd by Heat, violent Motion, a high Diet, spirituous Liquors, Tumours of any kind; within the Skull a partial and imperfect Circulation of the Blood towards the lower Parts. The Effusion and Pressure of any Serosity or Blood upon the Ventricles of the Brain (which is the most common and immediate Cause of Apoplexies) violent Passions and Affections of the Mind. The immediate Forerunners of an Apoplexy are commonly a Vertigo, Staggering, Loss of Memory, Stupor, Sleepiness, a Noise in the Ears, and a more deep and laborious Breathing; those last Symptoms commonly precede an Apoplexy, but they are likewise common to it with other nervous and hysterical Distempers.

Attention to the foremention'd Symptoms affords the best Cautions and Rules of Diet by way of Prevention;

vention; for when it has taken place *Hippocrates's* Prognostick is generally true, That it is very hard to resolve a small Apoplexy, and quite impossible to resolve a great one; the gentlest Kind of this Disease is often taken off by Sweating.

The Applications in the Fit are of the Medicinal Kind, it being too acute a Disease to admit of any Helps from Diet, but that may be of great use for Prevention; a thin, slender, cool, regular Diet, opposite to the particular Symptoms above-mention'd; frequent and copious Bleeding; keeping the Belly always open; stimulating Substances, which have been thought beneficial, in this Case very often hurt, by forcing the Blood too much up to the Head; Vomiting may prove extremely pernicious, but the Regimen is to be varied according to the Cause of the Disease, which may be collected from the Constitution of the Patient in these

Apoplexies, which depend upon a sanguineous Cause: The Regimen prescrib'd in sanguineous Constitutions is proper; fat and phlegmatick People, who are very subject to this Disease, ought to attend to the Rules prescribed in their Case; and as there are Apoplexies from inveterate Gouts, the Regimen of such must be different from both, the Intention being to translate the morbidick Matter upon the Extremities of the Body.

Those who have a Disposition to this Disease ought never to go to Bed with a full Stomach, nor to lie with their Head low.

An Apoplexy is resolv'd by a Fever, and when not fatal terminates in a Palsy.

There is a Disease of the same Kind, but not so frequent, call'd a Catalepsis, wherein the Patient is suddenly seiz'd without Sense or Motion, and remains in the same Posture

sture in which the Disease seizeth him, the Muscles remaining in the same Tension: Violent Fevers in strong atrabilarious dry Constitutions has produc'd this Distemper; the Diet after the Fit is off ought to be moistening and relaxing. A Lethargy is a lighter sort of Apoplexy, and demands the same Cure and Diet as an Apoplexy from a phlegmatic Cause, such being the Constitution of the Lethargick.

C H A P. IV.

Rules of Diet in CHRONICAL
DISEASES.

Palsy.

A PALS^Y is an Immobility of a Muscle from Relaxation, insuperable by the Will or any Endeavour of the Patient; sometimes the

B b 3

Sensa-

Sensation or Feeling is either totally abolish'd, or dull, with a Sense of Tingling: A Palsy is opposite to a Convulsion in the first; there is an Ineptitude to Motion from the too great Laxity in the Second; an Ineptitude to Motion from too great Tension, and a Relaxation of a Muscle, must produce a Spasm in its Antagonist, because the *Æquilibrium* is destroy'd. The best Rules of Diet in this Disease are taken from the Knowledge of its Causes. Whatever stops either the Flux of the Spirits, or the Flux of the Blood to any Part, induceth a Palsy, for both are necessary for Sense and Motion; such are all the Causes of an Apoplexy, an Epilepsy, extreme and lasting Pains, the Suppression of usual Evacuations either natural or morbid, Translations of morbid Matter in acute Distempers; whatever distends, distorts, compresses, or contracts the Nerves; strong and
 strait

Strait Ligatures, Luxations, Fractures, any Inflammation in the Integument, or membranaceous Sheath of a Nerve, especially in the Ganglia, where they are tied together; Serous Effluxions, Excess in astringent Aliment, especially unripe Fruits; drinking too much warm Water, which is weakning and relaxing; Excess in Coffee, or Tea; extreme Heat; extreme Cold; poisonous Vapours of Arsenick or Mercury.

A Palsy is more or less dangerous according to the Cause, the Extent, and Seat of the Disease; when the Original of the Disease is in the Brain, it is most dangerous; when it seizeth the Heart, or Organs of Breathing, fatal; because Life cannot be continued a Moment without the Use of those Parts.

The Regimen in this Disease ought to be warm, attenuating, consisting of spicy and cephalick Vegetables, such as create a feverish Heat, be-

cause such is necessary to dispel the Viscosity. Of Vegetables, soapy; of such as consist of an acrid, volatile Salt and Oil, Mustard, Horseradish, &c. stimulating by Vomits, Sneezing, relaxing the Belly, purging and diluting strongly at the same time, promoting Sweat by such Motions as can be us'd, or other Means, by strong Frictions, &c.

Bleeding is to be us'd or omitted according to the Symptoms which affect the Brain; it relieves in any inflammatory Disposition of the Coat of the Nerve.

Epilepsy Convulsions.

The Causes of which are sometimes an hereditary or family Disposition from Parents; a sudden Fright of the Mother when with Child of the Patient; an Affection of the Brain by a Contusion; Abscess, acrimonious Serum, Splinter of a Bone
or

or sharp Instrument; Inflammation, Corruption, Erosion of the Meninges or Membranes of the Brain; Fulness, Heat, Drunkenness, intense Study, strong Passions, especially sudden Terror; all violent Affections and Irritations of the Nerves in any Part of the Body; especially by something acrimonious in the Stomach or Bowels, by Worms, by Teething, and Acidity in the Stomach in Infants; by some Contagion or purulent Matter after acute Diseases; Suppression of usual Evacuations, the Menses, Hæmorroids; hysterical Affections contracted by Accidents in Lying-in; and often by too great Inanition; the smallest irritating Cause will induce a Fit in such as are subject to it, and such ought to be prevented with great Care.

There is no Disease which infests Mankind more terrible in its Symptoms and Effects, the worst of which are a weakening and perhaps an Abolition

bolition of the Faculties of the Mind ; whether the Cause of the Disease be in the Brain, is easily known from the concomitant Symptoms.

The Intentions in the Cure of the Disease must be different, according to the Cause ; Bleeding, and plentiful Evacuations, when there is a Plethora or inflammatory Disposition in the Brain ; Aliments without Acrimony, demulcent, avoiding every thing which stimulates, taking such things as are opposite to the particular Acrimony which causeth the Disease, relaxing the Belly without irritating ; in acute and periodical Pains, anodyne Substances ; if the Disease is the Consequence of an hysterical Disposition, a warmer Regimen is necessary ; if the Cause is in the Stomach, generally anti-acid Substances relieve ; if they are not flatulent, several have been cur'd by a Milk-Diet, but it will do hurt when there is Acidity in the Stomach ; when the

irri-

irritating Cause is in some outward Part of the Body, it is proper to eradicate it by Suppuration.

The common Custom of applying stimulating things, as volatile Salts and Spirits to the Nose, during the Fit, is generally speaking pernicious.

Epilepticks ought to breathe a pure Air, unaffected with any Steams, even such as are very fragrant. Their Diet ought to be nourishing, of easy Digestion, avoiding Hogs Flesh, Water-Fowl, and all Vegetables that are pungent, windy, and generally speaking all Fruits, especially Nuts; with little Wine, and none, if they have not been accustom'd to it; they ought not to turn round, nor stand on Precipices, to keep regular Hours for Repast and Sleep, for every unusual thing is a Stimulus; but of all things the most necessary is the avoiding the Occasions of violent Pas-

Passions, and keeping themselves chearful.

Melancholy, Madness.

The Constitution which disposeth to such a State, the Causes, Symptoms and proper Regimen in it is describ'd *Chap. II.*

This being a Disease more terrible than Death, extremely obstinate, invading sometimes by insensible degrees, and hard to be cur'd when it has taken place, the Approaches towards it ought to be carefully observ'd.

These are commonly obstinate Watchfulness, or short Sleeps, troublesome and terrible Dreams, great Solitude and Anxiety of Mind, with Sighing, sudden Fits of Anger without any Occasion given, Love of Solitude, Obstinacy in defending trifling Opinions, and Contempt of
such

such as are about them, Suppression of usual Evacuations, as of the *Menses* in Women, and *Hæmorrhoids* in Men; great Heat, Eyes hollow and fix'd, immoderate Laughter or Crying without occasion; too great Loquacity, and too great Taciturnity, by Fits; great Attention to one Object, all these Symptoms without a Fever.

When this Disease is hereditary it is seldom cur'd.

The atrabilarian Constitution, or a black viscuous pitchy Consistence of the Fluids which most frequently occasions this Disease, makes all Secretions difficult and sparing; the Intention therefore ought to be to render the Humours fluid, moveable, and carry them out of the Body, especially the Bile, which is viscuous; Sudorificks indeed are not so proper, because they thicken.

To use the Aliment prescrib'd
Chap. II. in atrabilarian Constitutions.

Boer-

Boerhaave gives an Instance of a Patient who by a long use of Whey, Water, and Garden-Fruits, evacuated a great Quantity of black Matter, and recovered his Senses. Cold Bath, and especially a sudden Immersion in the Sea, has done good by acting upon the Nerves and Spirits; wherever there is any Uneasiness or Sensation of Pain, one ought to solicit the Humours towards that Part, or to make the proper Evacuations from them, especially (if it be possible) to procure the Piles, which seldom miss to relieve the Head.

The Madness which proceeds from a Plethora, or too great Fulness, is cur'd by plentiful Bleeding and Purg-
ing.

The Weakness which succeeds the Madness requires a more refreshing and warm Diet, especially the use of Chalybeat Waters.

Scurvy.

Scurvy.

This is a Disease impossible to be defin'd by Words containing any simple or distinct Idea; it is rather a Name us'd to denote a Multitude of Symptoms, different, and sometimes opposite in their Causes and Cures.

It is a Distemper of the Inhabitants of cold Countries, and amongst those, such as inhabit marshy, fat, low, moist Soils, near stagnating Water, fresh or Salt; invading chiefly in the Winter such as are Seditary, or live upon salted and smoaked Flesh and Fish, or Quantities of unfermented farinaceous Vegetables, and drink bad Water; such as are Hypochondriacal and Hysterick; and sometimes such as have taken the Peruvian Bark, either in great Quantities, or without proper Evacuations. From these Causes the best Rules are taken for Prevention.

Its

Its Symptoms are a spontaneous Lassitude or Sensation of Weariness, being unrefresh'd by Sleep, laborious Breathing upon small Motion, cold Tumours in the Legs going off and returning; sometime Paleness, or a livid Colour of the Countenance; Spots on the Skin of various Colours, red, violet-colour'd, yellow, livid; sometimes an ill Smell in the Mouth, painful and bleeding Erosions of the Gums, and by these the Teeth growing bare and loose; Hæmorrhages of all kinds, Ulcers untractable, especially in the Legs, with a gangrenous Appearance in the Skin; the Itch; a dry crusty Eruption, and sometimes a small degree of Leprosy in the Skin; the Blood, when let, black, grumous, the red part without a due Consistence; the Serum saline, and of a yellowish Green; wandering Pains in the Limbs, increasing by the Warmth of the Bed, sometimes a feverish Heat.

These

These Symptoms proceed from an ill Temperature of the Blood, too thick or too thin, being of a saline Constitution, either from an acid, alkaline, or muriatick Cause, and according to the Cause, demands very different and oftentimes opposite Remedies. See Part First, of acid and alkaline Constitutions.

The Scurvy of Mariners is generally cured by Acids, as all sorts of ripe Fruits, Limons, Oranges, Butter-Milk; alkaline Spirits hurt them; and acid Spirits, as that of Salt, does them good; when the Symptoms are attended with a Fœtor of any kind, either in the Urine, Mouth, Breath, with Drought, Heat, Hæmorrhage of the Gums, or of any kind, such a Disease will be cur'd by acescent Substances, and none better than Whey: In this Scurvy Chalybeat Waters are generally effectual.

If the Scurvy be entirely muria-tick, proceeding from a Diet of salt Flesh or Fish, the Vegetables commonly called Antiscorbutick, as Water-creffes, Scurvy-Grafs, and Brook-Lime may be given with Success, but tempered with Acids, as the Juice of Oranges and Limons: And the Pot-Herbs which are anti-acid in this Case are a proper Diet; but if there be a high degree of Heat and Inflammation, the hot Antiscorbuticks will do hurt.

If the Patient be pale, cool, without Thirst, with pale or natural colour'd Urine, with a previous Diet of acescent Substances, the Eruptions not of a high inflammatory or livid Colour, the warm Antiscorbuticks, animal Diet, and animal Salts, are proper.

There is great Attention to be given to the Condition of the Mouth, Gums, and Teeth, in the Scurvy, from which the Nature and
Degree

Degree of the Disease may be guess'd at.

Violent Purging always hurts scorbutick Constitutions; lenitive Substances relieve.

Bleeding is not proper, unless where the Symptoms are urgent, and the Case is inflammatory.

A Scurvy, from an alkaline Cause is more dangerous than from an Acid.

Cachexy, or ill Habit of Body.

This is likewise a general Word to express a great Variety of Symptoms; most commonly it denotes such a Distemperature of the Humours as hinders Nutrition, and weakens the vital and animal Functions, proceeding from Weakness of the Fibres, and an Abuse of the Non-naturals, and often from severe acute Distempers: It sometimes disposeth to Consumptions, sometimes to Leucophlegmacy,

cophlegmacy, Bloatedness, and Dropsies; it is attended often with Palpitations of the Heart. The Rules for Diet must be drawn from the Symptoms. See Chap. I. of this Part.

Consumption pulmonary.

This Disease is a Decay of the whole Body, from an Ulcer of the Lungs, the Matter of which is mix'd, circulates with, and infects the Blood, and by its Acrimony infects the whole Mass of the Fluids.

This Disease makes up above a tenth part of all the *Bills of Mortality* about *London*, is often the Product of a scrophulous Constitution, or King's-Evil, seldom invades after Thirty Years of Age, may be prevented, but seldom admits of any other than a palliative Cure, and is generally incurable when hereditary, but easily so when it proceeds from an accidental Cause.

It

It is often preceded by a Spitting of Blood, occasion'd by its Acrimony, and too great a projectile Motion, with Slenderness and Weakness of the Vessels; to which Persons of a fair rosy Complexion, long Neck, and narrow Chest, are often subject; Aliment too viscous, obstructing the Glands, and by its Acrimony corroding the small Vessels of the Lungs (an Organ of a slender Texture, through which the Half of the whole Blood passeth, and which is never at rest) after a Rupture and Extravasation of Blood, easily producing an Ulcer, then a small Fever, dry Cough, Heat, Flushing after Repast; when the new Chyle enters the Lungs, short Breath, a Disposition to Sweat after Sleep; all these Symptoms, when the Blood is most copious and hot, between the Ages of 16 and 30; such a Disease may be induc'd by the Suppression of Evacuations natural and artificial, by any great

Force upon the Lungs, from some accidental Cause; by too hot, full, and acrimonious Meat or Drink, by some acute Disease, the Meazles or Small-Pox.

The Blood is ejected from the Lungs with some small Pain, Heat, Oppression on the Breast, florid, and frothing, with short Breathing, and a small soft quick Pulse.

If after such Hæmorrhage from the Lungs, the Symptoms increase, Shortness of Breath, Flushing in the Face, a Cough, heetick Fever, but especially Rigours and Chilliness invading irregularly, with Weakness, one may be sure that there is a Suppuration.

In a Hæmorrhage from the Lungs, no Remedy so proper as Bleeding, often repeated; Stypticks are often insignificant, and if it were possible that they could operate immediately upon the affected Part, so far as to make a Scar, when that fell off
the

the Disease would return. Both in-
crassating and styptick Substances
work universally, but they would
hurt the Lungs if given before the
Vessels are empty'd. Balsamick Sub-
stances often hurt by their too great
Heat.

The Intention here is by Diet to
abate the Acrimony and projectile
Motion of the Blood, after repeated
Bleeding; to keep strictly to a Milk
Diet, with farinaceous Substances, as
Rice and Barley, Milk with roasted
Apples, Jelly of Currants, or the
Jelly of any ripe subacid Fruit, which
is cooling, and very agreeable to
the Stomach; Milk and common
Water, or Barley-Water, for Drink,
taking the Aliment frequently, and
in very small Quantities, for fear of
charging the Lungs with too great
a Quantity of Chyle at a time. (*See*
Part I. Chap. II.) Avoiding all vio-
lent Motion, or any thing that puts
the Lungs upon a Stretch.

mony is likewise corrected by oily Vegetables, not such as contain a volatile or high exalted Oil, but those whose Oil is mild, as Almonds, Pistachos, Dates, &c.

The *English* Consumptions, generally speaking, proceed from a scrophulous Disposition; in the first Access of such a Disease any Substance which is deobstruent, without much Acrimony, is beneficial, but what heats disposeth to Suppuration.

There is likewise a Consumption from an Empyema, after an Inflammation of the Lungs, which may be known from a Weight upon the Diaphragm, Oppression of the Lungs, a difficulty of Breathing, and Inability to lie on one Side (which is that which is found) a perpetual Cough and Fever, with Thirst, Flushing of the Cheeks, Weakness, and Decay of Appetite.

The Cure of such a Case is chyrurgical, by opening the Side; if the
Ulcer

Ulcer is not broke, it is commonly called a Vomica, attended with almost the same Symptoms as an Empyema, because the Vomica communicating with the Vessels of the Lungs must necessarily void some of the putrid Matter into these Vessels, and taint the Blood.

The Ulcer may break suddenly into the Larynx, with the danger of Suffocation; or inwardly, and the Matter may by degrees be expectorated. The Event of the Disease depends upon the Symptoms, especially the Nature of the Pus; that which swims in Water, without any ill Smell, is better than what sinks, is livid, and smells of putrify'd Flesh.

There may be a Consumption with a purulent Spitting, when the Vomica is contain'd in a Cyst or Bag, upon the breaking of which the Patient is commonly suffocated.

In

In this Case the same Intentions must be pursued in the Diet, as in a Wound or any other Ulcer. The Aliment cool, demulcent, vulnerary, and not drying or hot, but consisting of Quantities of liquid things, even though they provoke Sweat. It is a common Mistake that acid things hurt the Lungs. The Gas Sulphuris may be given with Success in any Disease of the Lungs, but at some distance of Time from Milk, Vinegar, and Honey, is proper and detergent; anodyne Substances relieve the Cough; gentle Exercise by Riding, is beneficial; by an extremely exact Regimen a consumptive Person may hold out for Years, if the Symptoms are not violent.

The Sweats and Diarrhœa attending Consumptions are generally fatal Symptoms, but must be reliev'd by a Diet proper in these Cases, not interfering with what is formerly advis'd.

Con-

Consumptions are induc'd by Puerulency in any of the other Viscera; the Regimen must be very near the same as in the Pulmonary.

Dropsy.

This Disease is commonly an Extravasation of Serum receiv'd in some Cavity of the Body; I say commonly, for there may be a Dropsy by a Dilatation of the serous Vessels, as that in the Ovarium, wherein the very Membrane of the Ovum is extended with the Water, and at the same time thickened so as to keep it from Rupture.

Therefore this Disease may happen wherever there are serous Vessels; a Hydrocephalous, or Dropsy of the Head, which is only incurable when the Serum is extravasated into the Ventricles of the Brain, and generally fatal in Infants, when the Sutures

tures are clos'd, and the Skull will yield no more.

A Dropsy of the Breast is attended with almost the same Symptoms as an Empyema, and cur'd by the same Chirurgery.

A Dropsy of the Lungs, either by Hydatides, or by Lymph, extravasated in the Body of the Lungs.

A Dropsy in the Forepart of the Windpipe, emulating a Bronchocele.

A Dropsy in the Ovarium, *Testes*, *Scrotum*, or *Uterus*.

An Ascites, or Collection of Water in the Abdomen. 1. In the Duplication of the Peritonæum. 2. Between the Peritonæum and the Bowels. 3. When the Water is contained in the membranaceous Coat of the Glands.

Sometimes the Air is so rarify'd in the Tumour as makes it hard and tight like a Drum, and from thence it is call'd a Tympany; when the Tension

sion is from Air, it is easily distinguish'd by the Specifick Gravity of the Patient, and so is Water.

When the Lymph stagnates, or is extravasated under the Skin, it is called an Anasarka.

Whatever hinders the Return of the Lymph into the Veins, or breaks the lymphatick Vessels, or obstructs the absorbent Vessels, so as the Lymph cannot be absorb'd or exhal'd, produceth a Dropsy: Any Stoppage of the Circulation will produce a Dropsy, as by strong Ligature, or Compression.

The most common of these Causes are an hereditary Disposition; swelling down great Quantities of cold watery Liquors, which are not voided; violent acute Distempers; stubborn Obstructions of the Viscera; the Jaundice, obstinate intermitting Fevers, Bloody-Fluxes; great Evacuations, especially of Blood; Aliment
viscous

viscous and of hard Digestion; inveterate Scurvies; but the most common of all is the habitual and copious Use of fermented and spirituous Liquors.

The Effects are a Swelling of the Legs at Night by degrees, still ascending higher; a Swelling of the Belly increasing; and in a Tympany sounding and tense like a Drum; sometimes the Sensation and Noise of fluctuating Water, Shortness of Breath, Thirst, Urine in too small Quantity, no Sweat; The stagnating Serum at last turning acrimonious, exulcerates and putrifies the Bowels, producing most dismal Symptoms.

The best Cautions and Rules of Diet may be taken from the Enumeration of these Causes and Effects.

The Intentions to be pursued are, removing the Causes, as Obstructions,

structions, dissolving the Viscosity or Tenacity of the Lymph, and evacuating it out of the Body.

The Viscosity of the Lymph is best corrected by such Substances as contain abundance of alkaline and volatile Salts, Spices, acrimonious pungent Vegetables, saponaceous Substances; what they are the Reader may see Chap. I. of this Part.

The only Contradiction to this is too great Heat and Thirst, to which Regard is to be had, and do indicate the Use of Acids, Juice of Limons, Oranges, Sorrel, &c. I think it may be taken for a general Rule, when the Urine is high-colour'd, that Acids are proper, for they are opposite to that alkalescent State of the Humours, and resist the Putrefaction, which is the Effect of acrimonious Serum.

The Drink should be sparing; but forasmuch as the Thirst is sometimes intolerable, the Patient may be indulg'd

dulg'd the free Use of Spaw-Water and Rhenish Wine.

The Aliment should be dry, diuretick. *See Chap. I.* Diureticks of the acid Kind are the safest.

The Chirurgical Operations for drawing off the Waters are to be left to the Judgment of the Physician.

Nothing is more beneficial than strong Frictions of the Skin, which attenuate and promote the Circulation of the stagnating Serum.

Vomiting, in strong Constitutions, has prov'd often very effectual, for the Concussion of the solid Parts dissolves and dispels the stagnating Humours; and even Clysters of proper Ingredients are very beneficial.

Violent Purgers, by dissolving the Blood, have prov'd often pernicious.

Many have been cur'd by Abstinence from Drink, eating dry Biscuit, which creates no Thirst, and
strong

strong Frictions four or five times a Day.

When the extravasated Serum is evacuated, the Diet ought to be such as strengthens the solid Parts, allowing Spices and generous Wine, and especially the Use of Chalybeat Waters, Abstinence from other Sorts of Liquids, dry Food and Vegetables astringent, Exercise, especially Riding; and in general, such a Diet as generates good Blood.

If the Serum stagnates long, it turns acrimonious, and commonly renders the Patient feverish and thirsty. Acid or sour things are the properest both to prevent and cure these Symptoms, as they are opposite to that alkaline Putrefaction.

Gout.

This is a Disease which may affect any membranous Part, but commonly those which are at the greatest

D d

Distance

Distance from the Heart or the Brain, where the Motion of the Fluids is the slowest, the Resistance, Friction, and Stricture of the solid Parts the greatest, and the Sensation of Pain by the Obstruction of the small Vessels and Dilaceration of the nervous Fibres extreme.

The most common Seat of it is in the Foot, its Tendons, Nerves, Membranes, Ligaments, and Periosteum, or Membranes investing the Bones.

The most common Causes of it are an hereditary Disposition (which operates more strongly in this Disease than in any other) a too rich and high Diet, and too copious Use of Wine and other spirituous Liquors, especially at Supper; Excess in some other Pleasures; a full gross Habit of Body; the too copious use of acid or sour things, the Gout being the only Disease in which they are very hurtful to Human Bodies; a sudden

sudden chilling of the Feet after Sweat, or drying them at the Fire after being wet and cold; a sedentary Life, with a plentiful Diet, and intense Study, and Application of the Mind; most commonly a Gouty Constitution is attended with great Acuteness of Parts, the nervous Fibres both in the Brain and the other Extremities being delicate; and there are Instances where Wives have got it from their Husbands by Infection, so *Boerhaave* says; Females and young People are not subject to this Disease, unless where it is hereditary.

A proper Regimen of Diet is necessary in this Distemper, because it does not admit of very many Helps from Medicines, and there are no better Rules than Abstinence from those things which occasion it.

It seems to be a Disease of the nervous Parts, which makes it so hard to cure; Diseases are so as they are more remote in the Thread of the

Motion of the Fluids, by the constant and regular Returns of it in some People, and their Freedom from it after the Morbid Matter is exhausted; it looks as there were regular Accumulations and Gatherings of it, as of other Humours in the Body, growing perhaps in some People as Corns.

As one of the Causes of the Gout is the Suppression of Sweat and Perspiration, the procuring a due degree of these seems to be the best Preventive of it; if the Feet could be made to sweat, in due time it would prevent the Gout, which invades in such Constitutions of the Air as suppress Perspiration.

Violent Purgings, in Absence of the Paroxysm, by agitating the Humours often hurts, and during the Paroxysm, may draw the Gout inwardly.

The best Diet is Abstinence from acid Substances; the moderate use of
such

such as promote Perspiration, as Substances aromatical, and volatile Salts, which relieve the Gouty, as they make the Body perspirable; diluent Liquors, taken in such a degree as not to hurt the Stomach; Moderation in the Quantity of Food and spirituous Liquors; Exercise without Fatigue; but especially Frictions of the extreme Parts, daily, and often repeated; all possible Methods of making the Feet sweat, and much Sleep.

In the Paroxysm, as temperate and cool, and diluent a Diet as the Patient can bear; Abstinence from Opiates, except when the morbid Matter is separating (by Opiates any Irruption goes on better) the constant Use of them will hurt; keeping the affected Part warm, without the Application of Cataplasms, ev'n such as are emollient, weaken and relax too much, and have been sometimes found to distort the Parts.

It is of the utmost Importance to know if any Disease proceeds from a Translation of the Gouty Matter; for the Methods, especially Evacu- ations, us'd in an original Dis- ease, would be very improper in a Gouty Case, where the Intention must be to draw the Gout down to the Feet, by Blisters apply'd to the Thighs or Legs, and acrid inflammatory Ca- taplasms and Plaisters; therefore when any Gouty Person is disappointed of a Paroxysm which he expected by the Season, or the previous Symp- toms, and instead of it is seiz'd with another Disease, let him speedily consult his Physician.

If a Gouty Person can bring him- self intirely to a Milk Diet, he may so change the whole Juices of his Bo- dy as to eradicate the Distemper.

The Approach of a Fit of the Gout is easily known by the inward Disorders, as Wind, Sickness, Cru- dities in the Stomach, a Drowsiness, these

these join'd with the Season or Weather, if such a one by a statical Engine could regulate his insensible Perspiration, he might often by restoring of that, foresee, prevent, or shorten his Fit.

Greensickness, Obstructions.

The Symptoms of this Disease are evident, a due Age of the Patient, with an Obstruction of the Menses, a Fulness, sometimes Pains about the Loins, a Laziness, Inactivity, which is both the Cause and Symptom of the Disease; a quick Pulse, often emulating that of a hectick Fever, Palpitation of the Heart, Difficulty of Breathing upon the least Motion, a livid Circle about the Eyes, Dizziness of the Head, sometimes an Appetite of odd things, as Chalk, Tobacco-Pipes, proceeding from an Acidity

in the Stomach, a Paleness of the Face and Skin, unnatural Hæmorrhages from the Mouth, Nose, and other Parts, hysterical Symptoms.

Young Persons under a womanly Age are often troubled with some of the same Symptoms, but not from that Cause; and Women obstructed have not always the fore-mention'd Symptoms; in those, the Signs of Gravidity and Obstructions are hard to be distinguish'd in the beginning.

This Disease is the Parent of many other dangerous Diseases, and after six Months hardly to be cur'd.

What is to be consider'd in this Case, is chiefly, if there be a sufficient Fulness or Deficiency of Blood, different Methods are to be taken, in those two Cases, Bleeding, which may relieve in the first Case, will do hurt in the Second Motion; Exercise, Frictions, Bathings, Clysters,
Fu-

Fumigations often repeated are very beneficial.

Substances abounding with volatile oily Salts, Substances saponaceous, aromatical, as those Vegetables which abound with a volatile Oil.

When there is not a sufficient Plethora, a Diet wholesome, plentiful, and nourishing, at the same time strengthening the Organs of Digestion, is often effectual.

After Relaxing, such Substances as strengthen the solid Parts in general, are beneficial; it is by this Quality that Steel operates so strongly in this Distemper, and likewise as being an Antiacid. See Chap. I. N^o 18.

A Woman, who by some unusual Hæmorrhage has that natural Defect supply'd, is only to be cur'd by topical Remedies.

Diseases of Infants.

Infants new-born, before they have taken any Aliment, often have the whole alimentary Duct filled with a glutinous cheesy Matter, and all of them have a Meconium, or sort of dark-colour'd Excrement in the Bowels, which ought to be purg'd off.

Most of the Diseases of suckling Infants proceed from Milk growing sour and curdling in the Stomach; the Cure of which is to be effected, *First*, By attenuating this curdy Matter; and *Secondly*, by expelling it out of the Body; it may be digested by the Infant by Abstinence from Sucking for several Hours; Honey and Water, with a little Wine, attenuate and dissolve; and some gentle purging Syrup, as Syrup of Cichory with Rhubarb, expels the peccant

cant Matter; oily Substances are apt to turn rancid on the Stomachs of Infants; Clysters and warm Fomentations, and other Applications of aromatical Substances to the Stomach and Belly, are useful in this Case.

Antiacids, especially the Absorbents, are more effectual in the Diseases of Infants than in any other.

Opiates and anodyne Substances are dangerous.

Volatile Salts are hurtful to Infants, being too active, and operate sometimes as Opiates.

Gall is the greatest Resolvent of curdled Milk; *Boerhaave* has given at a time one Drop of the Gall of an Eel with Success.

Gentle Carminatives, as Fennel-Water, Mint-Water, relieve.

The Colick, green Stools, Vomiting, Wind, and Convulsions, all depend upon this Acidity, and
when

when that is rectify'd the Symptoms cease.

Diseases of Infants, and the Cure of them, depend very much upon the Diet of the Nurse. *See Part I. Page 93.*

When Children begin to feed upon Substances on which Insects deposite their Eggs, especially Fruits, they are often troubled with Worms, for want of a sufficient Force of Digestion to destroy these Eggs.

The most common Sort in Children are the round or Earth-Worms.

The Symptoms occasion'd by the Motion and Biting of these Worms are Loathing as it were from a Feather in the Throat, a Vomiting, Looseness, Fainting, a feverish Disposition, with a small quick Pulse, Itching of the Nose, Grinding of the Teeth, Fits, Paleness, a craving Appetite, Weakness, and when the Worms are large they consume the
Moisture,

Moisture, and instead of Looseness will occasion Astriction of the Belly, with a Swelling; Worms will perforate the Guts.

Children subject to Worms ought not to live much upon Milk, Cheese, or ripe Fruits, nor take much Sugar; some Insects lay their Eggs in Sugar.

The Gall of Animals, and Mercury, kill Worms, and destroy their Nests; it is found by Experience that the Water in which Mercury is boil'd has this Effect; all Bitters among alimentary Substances; Honey and Oil given by the Mouth, or Clysters, have a good Effect; they may be taken together fasting; any Substance which by its Pungency can wound the Worms, will kill them, as Steel, Hartshorn, Coralline, Coral powdered, Fish Bones. See Chap. I.

Above

Above a tenth Part of Infants die in Teething, by Symptoms proceeding from the Irritation of the tender nervous Parts of the Jaws, occasioning Inflammations, Fevers, Convulsions, Looseness, with green Stools (not the worst Symptom) and in some, Gangrenes: It is plain that such a Case ought to be treated as any other inflammatory Distemper.

When the Symptoms of Teething appear, the Gums ought to be relax'd by softening Ointment, the Jaws fomented with emollient Decoctions, and the whole Head to be kept warm; when the Teeth is ready to cut, the upper Part rubb'd with hard Substances, which Infants by a natural Instinct affect, and when there is a manifest Tension of the Gum by the Tooth, then it ought to be cut; but this Operation ought not to be perform'd too soon.

In the Convulsions it is necessary to give volatile Spirits, which they can bear better than when they are new-born.

The Rickets is another Disease to which Children are subject: It has been reckoned a Disease unknown to the Ancients, uncommon in hot Countries, and more common in *England* than any other Northern Country.

Children have this Disease from sickly Parents, and especially from Mothers of a weak lax Constitution, living on a various, high, and plentiful Diet, without Exercise; and Children born healthy, often contract the Disease from an unwholsom Nurse.

A Diet of farinaceous Substances infermented, as of Pudding, much Butter, wet or ill-air'd Linen, cutaneous Eruptions repell'd, or ill cur'd, exposing their lower Parts too long
to

to cold Air, may bring, or at least increase this Disease.

The Disease may be foreseen by the Child's being long in taking to his Feet; when it takes place the Child grows lean, the muscular Flesh decays, and grows flabby, the Skin loose and flaccid, the Epiphyses of the Bones about the Joints of the Arms grow big, the Belly swells, the Blood-Vessels about the Neck enlarge, and so does the Head it self, the Bones grow crooked; these are the outward Appearances, the Constitution of the inward Parts is often much worse.

It is highly probable that this Disease proceeds from a redundant Acidity, because Vinegar will soften and crook tender Bones; and this Symptom must happen in Children when there is no Strength in the Muscles to support them, or they must be inflected to that Side where the
Muscle

Muscle pulls strongest. Contrary to the common Rules for the Aliment of Children, the Diet of those that are Rickety ought to be moderately warm, even making use of Spices or carminative Seeds. They ought to forbear unfermented farinaceous Substances, new Bread; and rather use Biscuit. Their Diet should be pretty much of flesh Meat, such as are commonly call'd White Meats, and rather roasted than boil'd, such Diet being anti-acid. They may be allow'd a moderate Quantity of Wine.

I knew a rickety Child cur'd by a very great Indulgence of fermented Liquors, but it is not an Experiment that I would advise.

Frictions of the Back-bone and Joints with Flannel, smoak'd with penetrating aromatical Substances, and fomenting the Joints with old Malaga Wine, have prov'd often very effectual.

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They ought to use as much Exercise as they are capable of, but especially by Voiture or Carriage. Care must be taken to open the Obstructions in the lower Belly by Vomits and proper Purgations, where the Seat of the Disease chiefly lies, and after that the Cold Bath is a very proper and effectual Remedy.

I have lanch'd out of my Subject under this Head, mentioning some medicinal Helps, because the Nurses in such Cases are often the Physicians, which nevertheless they ought not to be when they can get better Advice.

Small-Pox.

Though I took notice of this Disease in the Article of Feverish Irruptions, yet it being one of the most dangerous and universal that infests Mankind, I shall add a few
more

more Rules which may be of use to such as have not the Advice of an able Physician.

The greatest and most important Strokes for the Recovery of the Patient; must be made at the time of the Invasion, or first State of this Disease; therefore it is necessary to know the first Symptoms of it; many have suffer'd by mistaking it for another Disease.

In general, young Persons who have not had the Disease ought to be extremely careful to avoid great Irregularities in their Diet, because the Small-pox which are occasion'd by such, often prove dangerous. This Disease is likewise more dangerous as the Fluids are more exalted and dissipated, and the Solids more strict and compacted, and consequently more so as People are advanc'd in Age.

This Disease may be easily communicated by the Contagion or Steams of an infected Person swimming in the Air, and drawn in by the Breath, or perhaps by the Pores of the Skin; and it is evident by Inoculation that the smallest Quantity of the Matter mix'd with the Blood produceth the Disease, tho' not so quickly as those volatile Steams.

The first Symptoms are a Chillness, Rigor, succeeded by a Fever and constant Heat, a certain Splendor or Shining in the Eyes, with a little moisture; this is very observable in Children; a great Pain in the Head, with Dulness, Drowsiness, Sleepiness, a Pain in the Back in some, but Pains in the Limbs in all, Anxiety, Inquietude, notwithstanding their Drowsiness, Loathing, Sickness of the Stomach, Vomiting, and in Infants Convulsions shortly before

before the Eruption. The Blood let the first time, florid; after a second time sily.

It is evident that in this State the Disease ought to be treated as any other inflammatory Distemper, by such Methods as if it were possible to hinder any Suppuration at all, and to resolve and digest as much of the feverish Matter as we can; for the longer the Eruption is a coming, and the smaller when it comes, the Disease is less dangerous; therefore all the Methods practis'd in the beginning of inflammatory Diseases are here necessary, with a particular Care of cleansing the alimentary Duct by Vomiting and Clysters, the Impurities of which will be carried into the Blood.

There is not yet found any particular Antidote to the poisonous Stimulus of this Distemper; the learned *Boerhaave* is of opinion,

that if any such could be found, it must be in Antimony, or Mercury intirely destitute of all Acrimony: The Effects of Mercury on all Ulcerations are very manifest.

Bleeding, which is extremely useful in the beginning of the Disease, is not so proper and useful when it is advanc'd.

In the first Stage the whole Habit of the Body ought to be relax'd, a free Perspiration thro' the Skin, without violent Sweating, promoted; the Viscosity or Toughness of the Fluids taken off by diluents; the alkalescent State of the Salts corrected; all these things are effected by emollient Fomentations apply'd inwardly in Clysters, and why not outwardly to the Skin? Such are us'd successfully in other Eruptions, as Erysipelas, Shingles, by a slender Diet of Decoctions of farinaceous Vegetables, and copious drinking
of

of cooling Liquors, with nitrous and acid Salts, and other acid Substances, mix'd with them; no Flesh, unless it be small Chicken-Broth; no Spice; the Air ought not to be spoil'd by Heat, nor the Coverings of the Bed so thick as to promote Sweat.

The Greatness and Danger of this Disease is estimated by the Quantity of Eruptions on the Face and other Parts of the Head; therefore the Matter ought to be solicited by all possible Methods to the lower Parts, especially the Legs, by Fomentations, Bathing, Epispasticks, Blistering, and through the whole Disease keeping the Feet and Legs warm; the Breast and Head not any more cover'd than to keep them from the Impression of cold Air.

During the Filling and Ripening of the Pustles, the Diet may be more plentiful, but still not hot or

inflammatory, with the due Use of anodyne Substances: In this State Demulcents, or what abates Acrimony; and where the Circumstances of the Patient require it, a Spoonful or two of Canary Wine, twice or thrice a Day, are proper: The Diet in this State ought likewise to be adapted to the particular Symptoms of the Disease, as cleansing, attenuating, expectorating; to promote the Spitting, diuretick; when that is suppress'd, and Clysters diluent, without any Stimulus, frequently injected, are beneficial in every Stage of the Disease.

When the Age, Temperament, high Pulse, and especially a Watchfulness and Delirium, all would seem to demand it in any other Case, why not Bleeding in this State? which I know to have been us'd with great Success; a great many Vessels are in this State almost impervious

pervious by the Fluids; those who die of this Disease have inward Inflammations, especially in the Lungs; those Reasons seem to justify Bleeding.

Indeed the gangrenous Disposition which appears in the malignant Kind, is a Reason against it, but hardly any thing will do good in these extremely malignant Cases.

In such malignant Kinds, all that is left is at last to try evacuating the morbifick Matter by other ways, as Epispasticks and Stools procur'd by lenitive Substances, not irritating, which would only agitate the Humours and increase the Fever.

Gravel, Stone.

A Stone or stony Matter may grow in any Part of a Human Body; for when any thing insoluble sticks in any Part of the Body, it
gathers

gathers a Crust about it; a small Drop of concreted Blood may grow to be a Stone, for by the Evaporation of the most fluid Parts it grows hard, and by the Attraction of new Matter increaseth: Blood, and a Human Calculus, or Stone, yield the same Contents by Chymical Trial, tho' in an inverse Order.

These stony Concretions happen most commonly in the Kidneys and Bladder; and indeed if the Tartar and other Contents of the Urine were not constantly voided, such Concretions would happen to every Human Creature; for the Urine of the most sound Person being inspected with a Microscope, after it has stood a while, will discover a black Speck, which is Sand, and wherever this Sand sticks it grows still bigger, by the apposition of new Matter: When such Concretions

tions happen in the Kidneys, and are expell'd or drop into the Ureters, it makes what we call Gravel; when they lodge and stick in the Body of the Kidneys, and grow to such a Bulk as not to drop into the Pelvis, or pass by the Ureters, they make the Stone in the Kidneys: The Symptoms of which are a dull Pain in the Kidney, most commonly bloody Water; upon a sudden Jolt, violent Motion, Pain in Stooping; Pain in the Thigh, Sickness in the Stomach, Colical Pains, various Changes in the Colour of the Urine, black, bloody, pale, occasion'd by something sharp or scabrous wounding the small Blood-Vessels; if the Stone is smooth and well bedded, perhaps this may not happen. Fleshy Filaments, or Matter voided by Urine, are suspicious Symptoms of a Stone in the Kidney, especially
if

if the Patient has been subject to Voiding of Gravel.

When a small Stone is lodg'd in the Body of the Kidney, it does not create Pain, nor much when it falls into the Pelvis; but when it falls into the Ureter, and sticks, the Pain is most acute; it often stops at the Flexure and Valve of the Ureter, and sometimes in the Urethra, or Passage of the Urine from the Bladder; while it stays in the Bladder it creates no Pain, but remaining there long it grows a confirm'd Stone, too big to be pass'd by the Urethra: The manner of its Concretion is by concentrical Rings, like an Onion, about the first Kernel, which shews the Cause to be Attraction. This is not only true of a small Stone, but any solid Body lodg'd in the Bladder will make the Kernel of a Stone; the Experiment of a Bullet's producing

ducing this Effect has been try'd upon a Dog; and such an Accident has happen'd to a Man by a Wound, in which a Bullet has dropt into the Bladder.

The Symptoms of a Stone in the Bladder are a Titillation about the Neck of the Bladder, and the Parts thereabout; a frequent Needing to make Water; a Sensation of Weight in the lower Belly, under the Shear-Bone, with a great Pain, especially upon any sudden Motion, which causeth a Concussion of the Bladder, a Dribling, Difficulty, and a momentary Suppression of Urine by the Stone, shutting up the Orifice of the Bladder, attended with a Tenesmus, or needing to go to Stool, and a burning Pain in the Urethra; sometimes a white Mucus in the Urine; tho' this last Symptom will happen without a Stone in the Bladder.

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The Regimen in the Stone in the Kidneys is by diluent and soft Diureticks to try to expel it, if it is small enough to pass; if the Stone is brittle, it will often crumble and pass in the Form of Gravel; if the Stone is too big to pass, the best Method is to come to a sort of a Composition or Truce with it; the Diet ought to be cool and diluent, as far as possible to hinder its Growth; to use Diureticks that gently resolve, as Parsley, Fennel, Scorzonera, Sassafras, Mallows, and Tea, Dandelion, Cichory, Oats, Barley, Honey, Honey and Vinegar; Nitrous Salts, as Spirit of dulcify'd Nitre; the most soft cooling Diluent of all, is Whey; the best Emollients are Decoctions of Marshmallows, Linseed-Tea.

Bathing in tepid Water, Clysters, seasoning the Aliment moderately with Sea-Salt, for the moderate Use
of

of it is resolving and diuretick; the Belly, in all Cases of the Stone, ought to be kept lax and open.

In a confirm'd Stone of the Kidneys too violent Exercise is dangerous.

During the passing of a Stone, one should avoid at first all strong Stimulating; relaxing and lubricating the Passages, and quieting the Spasms by Opiates is certainly the best Method; and where Bathing cannot be conveniently had, Ox-Bladders, half full of warm Water, apply'd constantly to the affected Part may be usefully substituted. Letting of Blood taketh off a Tension better than any thing, and is very necessary where the Symptoms are violent; when the Parts are sufficiently relax'd, stimulating Diureticks may be us'd more safely, especially if associated with Opiates.

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As to Dissolvents of the Stone; all that have hitherto been propos'd are chimerical; *Helmont* talks of Bulls Blood; Goats Blood is rather a better Dissolvent.

The surest way to hinder the Generation of a Stone, is to procure a Diarrhoea by Whey, Broth, and a liquid Diet; and indeed what would not one do to prevent so painful a Disease?

When the Stone is fallen to the Bladder, Care should be taken to make it pass as soon as possible, for the Reasons above-mention'd; if all the Symptoms abate without the passing of the Stone, it is not certain that the Stone remains in the Bladder, because a very small Stone may pass insensibly by Urine; if the Stone has pass'd, it is not certain that the Fit is over, for there are often more, and the usual Remedies ought not to be left off.

The

The Irritations of the Membranes of the Bladder by a Stone, may be much mitigated by the Injection of the Oil of Linseed or Almonds, into the Bladder.

Such as are subject to the Gravel or Stone ought to be careful of their Diet, to use such Aliments as generate a small Quantity of Fœces, or relax the Belly; Aliment demulcent, as Pease; a Decoction of Chick-Pease is a Remedy in a Fit of the Stone; they ought to drink Whey in the Spring, and take Honey in several Forms, if it agrees with them; Rice, Barley, Millet, are all good in this Case; nothing makes Stones or Gravel pass more easily than Opiates.

If the Stone sticks in the Urethra, emollient Fomentation of the Parts, Oil injected, or in case of great Extremity, an Instrument with a Cavity like a small Spoon,

dipt in Oil, may fetch out the Stone.

The Stone in the Bladder is not only a painful, but a mortal Disease, if not extracted. The Diet of a Patient in such a Case is such as of a wounded Person, nourishing, without Acrimony.

Let the Reader look into the Article of Inflammations of the Kidneys, where there are some Directions proper for all who are subject to the Stone or Gravel.

Rheumatism.

The Disease seems to be an inflammatory Disposition in the serous Part of the Blood, affecting the lymphatick Arteries, and therefore affecting those Parts where the Vessels are the narrowest. The Blood, as in other inflammatory Cases, is sily, the alkalescent Salts in the Serum

rum producing coreaceous Concretions.

The common Methods us'd in this Case are certainly proper; these are, repeated Bleedings and Purges, interposing Anodynes, and gentle Sudorificks; and Blisters when the Pain is obstinate in one Part.

As for the Diet, it ought to be cool, diluting, and chiefly Vegetable.

If there be a Specifick in Aliment it is certainly Whey; I knew a Person subject to this Disease who could never be cur'd by any other Method but a Diet of Whey and Bread. A Milk Diet is likewise effectual for changing that saline Constitution of the Serum of the Blood.

Cream of Tartar in Water-Gruel, taken for several Days, will abate the Pains and Swellings considerably, by its Acidity correcting the alkaliescent Salts in the Blood.

In

In obstinate Sciatic Pains, Blistering and Cauteries have been found effectual, and the most penetrating Medicines, especially the ethereal Oil of Turpentine mix'd with Honey.

I have lanch'd out of my Subject in this Article, because of many common People who cannot always have good Advice.

F I N I S.









